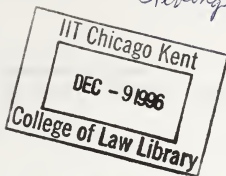


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1996

Illinois Register

Rules of Governmental Agencies

Volume 20, Issue 49 — December 06, 1996

Pages 15413 - 15656

Index Department
Administrative Code Div.
111 East Monroe Street
Springfield, IL 62756
(217) 782-7017
<http://www.sos.state.il.us>

published by
George H. Ryan
Secretary of State



Printed on recycled paper

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Editor's Note: The Cumulative Index and Sections Affected Index will be printed on a quarterly basis. The printing schedule for the quarterly and annual indexes are as follows:

April	19, 1996 - Issue 16: Through	March	31, 1996
July	19, 1996 - Issue 29: Through	June	30, 1996
October	18, 1996 - Issue 42: Through	September	30, 1996
January	17, 1997 - Issue 3: Through	December	31, 1996 (Annual)

INTRODUCTION

The *Illinois Register* is the official state document for publishing public notice of rulemaking activity initiated by State governmental agencies. The table of contents is arranged categorically by rulemaking activity and alphabetically by agency within each category. The Register also contains a Cumulative index listing alphabetically by agency the Parts (sets of rules) on which rulemaking activity has occurred in the current Register volume year and a Sections Affected Index listing by Title each Section (including supplementary material) of a Part on which rulemaking activity has occurred in the current volume year. Both indices are action coded and are designed to aid the public in monitoring rules.

Rulemaking activity consists of proposed or adopted new rules; amendments to or repealers of existing rules; and rules promulgated by emergency or peremptory action. Executive Orders and Proclamations issued by the Governor; notices of public information required by State statute; and activities (meeting agendas, Statements of Objection or Recommendation, etc.) of the Joint Committee on Administrative Rules (JCAR), a legislative oversight committee which monitors the rulemaking activities of State agencies; is also published in the Register.

The Register is a weekly update to the *Illinois Administrative Code* (a compilation of the rules adopted by State agencies). The most recent edition of the Code along with the Register comprise the most current accounting of State agencies' rules.

The Illinois Register is the property of the State of Illinois, granted by the authority of the Illinois Administrative Procedure Act [5 ILCS 100/1-1 et seq.].

REGISTER PUBLICATION SCHEDULE 1996

Material Rec'd after 12:00 p.m. on:	And before 12:00 p.m. on:	Will be in Issue #:	Published on:	Material Rec'd after 12:00 p.m. on:	And before 12:00 p.m. on:	Will be in Issue #:	Published on:
Dec. 19, 1995	Dec. 26, 1995	1	Jan. 5, 1996	June 25, 1996	July 2, 1996	28	July 12, 1996
Dec. 26, 1995	Jan. 2, 1996	2	Jan. 12, 1996	July 2, 1996	July 9, 1996	29	July 19, 1996
Jan. 2, 1996	Jan. 9, 1996	3	Jan. 19, 1996	July 9, 1996	July 16, 1996	30	July 26, 1996
Jan. 9, 1996	Jan. 16, 1996	4	Jan. 26, 1996	July 16, 1996	July 23, 1996	31	Aug. 2, 1996
Jan. 16, 1996	Jan. 23, 1996	5	Feb. 2, 1996	July 23, 1996	July 30, 1996	32	Aug. 9, 1996
Jan. 23, 1996	Jan. 30, 1996	6	Feb. 9, 1996	July 30, 1996	Aug. 6, 1996	33	Aug. 16, 1996
Jan. 30, 1996	Feb. 6, 1996	7	Feb. 16, 1996	Aug. 6, 1996	Aug. 13, 1996	34	Aug. 23, 1996
Feb. 6, 1996	Feb. 13, 1996	8	Feb. 23, 1996	Aug. 13, 1996	Aug. 20, 1996	35	Aug. 30, 1996
Feb. 13, 1996	Feb. 20, 1996	9	Mar. 1, 1996	Aug. 20, 1996	Aug. 27, 1996	36	Sept. 6, 1996
Feb. 20, 1996	Feb. 27, 1996	10	Mar. 8, 1996	Aug. 27, 1996	Sept. 3, 1996	37	Sept. 13, 1996
Feb. 27, 1996	Mar. 5, 1996	11	Mar. 15, 1996	Sept. 3, 1996	Sept. 10, 1996	38	Sept. 20, 1996
Mar. 5, 1996	Mar. 12, 1996	12	Mar. 22, 1996	Sept. 10, 1996	Sept. 17, 1996	39	Sept. 27, 1996
Mar. 12, 1996	Mar. 19, 1996	13	Mar. 29, 1996	Sept. 17, 1996	Sept. 24, 1996	40	Oct. 4, 1996
Mar. 19, 1996	Mar. 26, 1996	14	Apr. 5, 1996	Sept. 24, 1996	Oct. 1, 1996	41	Oct. 11, 1996
Mar. 26, 1996	Apr. 2, 1996	15	Apr. 12, 1996	Oct. 1, 1996	Oct. 8, 1996	42	Oct. 18, 1996
Apr. 2, 1996	Apr. 9, 1996	16	Apr. 19, 1996	Oct. 8, 1996	Oct. 15, 1996	43	Oct. 25, 1996
Apr. 9, 1996	Apr. 16, 1996	17	Apr. 26, 1996	Oct. 15, 1996	Oct. 22, 1996	44	Nov. 1, 1996
Apr. 16, 1996	Apr. 23, 1996	18	May 3, 1996	Oct. 22, 1996	Oct. 29, 1996	45	Nov. 8, 1996
Apr. 23, 1996	Apr. 30, 1996	19	May 10, 1996	Oct. 29, 1996	Nov. 4, 1996 (Mon.)	46	Nov. 15, 1996
Apr. 30, 1996	May 7, 1996	20	May 17, 1996	Nov. 4, 1996	Nov. 12, 1996	47	Nov. 22, 1996
May 7, 1996	May 14, 1996	21	May 24, 1996	Nov. 12, 1996	Nov. 19, 1996	48	Dec. 2, 1996 (Mon.)
May 14, 1996	May 21, 1996	22	May 31, 1996	Nov. 19, 1996	Nov. 26, 1996	49	Dec. 6, 1996
May 21, 1996	May 28, 1996	23	June 7, 1996	Nov. 26, 1996	Dec. 3, 1996	50	Dec. 13, 1996
May 28, 1996	June 4, 1996	24	June 14, 1996	Dec. 3, 1996	Dec. 10, 1996	51	Dec. 20, 1996
June 4, 1996	June 11, 1996	25	June 21, 1996	Dec. 10, 1996	Dec. 17, 1996	52	Dec. 27, 1996
June 11, 1996	June 18, 1996	26	June 28, 1996	Dec. 17, 1996	Dec. 23, 1996 (Mon.)	1	Jan. 3, 1997
June 18, 1996	June 25, 1996	27	July 5, 1996	Dec. 23, 1996	Dec. 31, 1996	2	Jan. 10, 1997

Please note: When the Register deadline falls on a State holiday, the deadline becomes 4:30 p.m. on Monday (the day before).

DEPARTMENT OF CHILDREN AND FAMILY SERVICES

NOTICE OF PROPOSED AMENDMENTS

- 1) Heading of the Part: Purchase of Service

- 2) Code Citation: 89 Ill. Adm. Code 357

- 3) Section Numbers:

Section Number	Proposed Action:
357.1	Renumber
357.2	Renumber, Amend
357.3	Renumber, Amend
357.4	Renumber, Amend
357.5	Renumber
357.6	Renumber
357.7	Renumber
357.8	Renumber
357.9	Renumber, Amend
357.10	Renumber
357.11	Renumber, Amend
357.12	Renumber, Amend
357.13	Renumber
357.20	New
357.30	New
357.40	New
357.50	New
357.60	New
357.70	New
357.80	New
357.90	New
357.100	New
357.110	New
357.120	New
357.130	New
357.140	New

- 4) Statutory Authority: Children and Family Services Act [20 ILCS 505]

- 5) A Complete Description of the Subjects and Issues Involved: The Department is adding a new Section to its purchase of service rules to require background checks on persons who provide day care services which are subject to the Department's background check requirements. The Department's Services in which the background check is required by this Section includes a check of the Child Abuse and Neglect Tracking System (CANTS), the Statewide Child Sex Offender Registry, and authorization to conduct a criminal history background check. The Department will conduct a criminal history background check on all persons who indicate they have been convicted of other than a minor traffic violation and a random sample of no more than 15% of all other individuals subject to a background check.

In addition, the Department clarified its audit requirement for day care

DEPARTMENT OF CHILDREN AND FAMILY SERVICES

NOTICE OF PROPOSED AMENDMENTS

funds.

- 6) Will these proposed amendments replace an emergency rule currently in effect? No

- 7) Does this rulemaking contain an automatic repeal date? No

- 8) Does this rulemaking contain incorporations by reference? No

- 9) Are there any proposed amendments pending on this Part? Yes

Section Numbers: Proposed Action: Illinois Register Citation:

357.12 Amend 20 Ill. Reg. 3650, March 1, 1996

- 10) Statement of Statutory Policy Objectives: These rules do not create or expand a state mandate as defined in Section 3(b) of the State Mandates Act [30 ILCS 805/3(b)].

- 11) Time, Place, and Manner in which interested persons may comment on this proposed rulemaking: Comments on this proposed rulemaking may be submitted in writing for a period of 45 days following publication of this notice. Comments should be submitted to:

Jacqueline Nottingham, Chief
Office of Rules and Procedures
Department of Children and Family Services
406 East Monroe, Station # 222
Springfield, Illinois 62701-1498

217/524-1983
TTY: 217/524-3715

The Department will consider fully all written comments on this proposed rulemaking submitted during the 45-day comment period. Comments submitted by small businesses should be identified as such.

- 12) Initial Regulatory Flexibility Analysis:

A) Times of small businesses affected: Day care homes and day care centers.

B) Reporting, bookkeeping or other procedures required for compliance: Day care home and day care centers who provide day care to children who are receiving services from the Department of Children and Family Services will be required, as a condition of payment, to authorize a background check. The day care provider will need to insure that all persons subject to a background check authorize the background check

DEPARTMENT OF CHILDREN AND FAMILY SERVICES

NOTICE OF PROPOSED AMENDMENTS

and submit fingerprints, if requested by the Department.

- C) Types of professional skills necessary for compliance? Simple record keeping skills.

- 13) Regulatory Agenda on which this rulemaking was summarized: This rule was not included on either of the 2 most recent agendas because: The need for this rulemaking was not anticipated when the Department last filed regulatory agendas.

The full text of the proposed rules begins on the next page.

DEPARTMENT OF CHILDREN AND FAMILY SERVICES

NOTICE OF PROPOSED AMENDMENTS

TITLE 89: SOCIAL SERVICES
CHAPTER III: DEPARTMENT OF CHILDREN AND FAMILY SERVICES
SUBCHAPTER C: FISCAL ADMINISTRATION

PART 357

PURCHASE OF SERVICE

Section	Purpose (Renumbered)
357.1	Definitions (Renumbered)
357.2	Procuring Services (Renumbered)
357.3	Issuance of Requests for Proposals (Renumbered)
357.4	Content of Requests for Proposals (Renumbered)
357.5	Evaluation of Proposals (Renumbered)
357.6	Notification of Awards (Renumbered)
357.7	Closure of Proposals (Renumbered)
357.8	Contract Approval (Renumbered)
357.9	Contract Approval
357.10	Purpose, Expiration, Duration, and Contract Period
357.11	Fiscal Reports and Records (Renumbered)
357.12	Required Documentation (Renumbered)
357.13	Contract Termination (Renumbered)
357.20	Definitions
357.30	Purchase of Day Care Services
357.40	Procuring Services
357.50	Issuance of Requests for Proposals
357.60	Content of Requests for Proposals
357.70	Evaluation of Proposals
357.80	Notification of Awards
357.90	Closure of Proposals
357.100	Contract Approval
357.110	Compliance During the Contract Period
357.120	Fiscal Reports and Records
357.130	Required Documentation
357.140	Contract Termination

AUTHORITY: Implementing 42 CFR 431 and authorized by Section 5 of the Department of Children and Family Services Act [20 ILCS 505].

SOURCE: Adopted and codified at 5 Ill. Reg. 14546, effective December 29, 1981; amended at 6 Ill. Reg. 9234, effective July 26, 1982; amended at 8 Ill. Reg. 12127, effective July 13, 1984; amended at 9 Ill. Reg. 11292, effective July 15, 1985; amended at 13 Ill. Reg. 3344, effective March 1, 1989; amended at 21 Ill. Reg. _____, effective _____.

Section 357.1 Purpose (Renumbered)

(Source: Renumbered to Section 357.10 at 21 Ill. Reg. _____, effective _____.)

DEPARTMENT OF CHILDREN AND FAMILY SERVICES

NOTICE OF PROPOSED AMENDMENTS

Section 357.2 Definitions (Renumbered)

(Source: Renumbered to Section 357.20 at 21 Ill. Reg. _____, effective _____)

Section 357.3 Procuring Services (Renumbered)

(Source: Renumbered to Section 357.40 at 21 Ill. Reg. _____, effective _____)

Section 357.4 Issuance of Requests for Proposals (Renumbered)

(Source: Renumbered to Section 357.50 at 21 Ill. Reg. _____, effective _____)

Section 357.5 Content of Requests for Proposals (Renumbered)

(Source: Renumbered to Section 357.60 at 21 Ill. Reg. _____, effective _____)

Section 357.6 Evaluation of Proposals (Renumbered)

(Source: Renumbered to Section 357.70 at 21 Ill. Reg. _____, effective _____)

Section 357.7 Notification of Awards (Renumbered)

(Source: Renumbered to Section 357.80 at 21 Ill. Reg. _____, effective _____)

Section 357.8 Disclosure of Proposals (Renumbered)

(Source: Renumbered to Section 357.90 at 21 Ill. Reg. _____, effective _____)

Section 357.9 Contract Approval (Renumbered)

(Source: Renumbered to Section 357.100 at 21 Ill. Reg. _____, effective _____)

Section 357.10 Purpose Compliance-During-the-Contract-Period

The purpose of this Part is to explain how the Department purchases professional services on behalf of the children, youth and families it serves and what the Department requires from a purchase of service provider. This Part does not apply to the goods and services governed by the standard procurement rules of the Department of Central Management Services.

DEPARTMENT OF CHILDREN AND FAMILY SERVICES

NOTICE OF PROPOSED AMENDMENTS

(Source: Old Section 357.10 renumbered to Section 357.110 and new Section 357.10 renumbered from Section 357.11 at 21 Ill. Reg. _____, effective _____)

Section 357.11 Fiscal Reports and Records (Renumbered)

(Source: Renumbered to Section 357.120 at 21 Ill. Reg. _____, effective _____)

Section 357.12 Required Documentation (Renumbered)

(Source: Renumbered to Section 357.130 at 21 Ill. Reg. _____, effective _____)

Section 357.13 Contract Termination (Renumbered)

(Source: Renumbered to Section 357.140 at 21 Ill. Reg. _____, effective _____)

Section 357.20 Definitions

"Adult" means a person age 18 and older.

"Department", as used in this Part, means the Illinois Department of Children and Family Services.

"Equal proposals for family preservation services" means proposals received by the Department which have been assigned, after review, the same number of evaluation points and the services to be provided are equal pursuant to the requirements of Section 357.20 9596.

"Real child care arrangement" means child care is being provided in a licensed child care facility, in a child care facility which is exempt from licensing, or in the child's own home.

"Minor traffic violation" means a traffic violation under the laws of the State of Illinois or any municipal authority therein or another state or municipal authority which is punishable solely by fines as a petty offense. (See Section 6-601 of the Illinois Driver Licensing Law 1625 ILCS 5/6-601.1.)

"Negotiated contract" means a written contract with an agency or individual to provide needed child welfare or youth services, which contract is not competitively bid, but rather is mutually agreed upon with a provider. Use of such contracts is further described in Section 357.40 9593.

"New service initiatives" means services which heretofore have not

DEPARTMENT OF CHILDREN AND FAMILY SERVICES

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been provided by or purchased by the Department in the State or in a specific geographical area of the State.

"Professional services" as used in this part means child welfare services as defined in Department Rules, 89 Ill. Adm. Code 302. Service delivered by the Department, and youth services as defined below.

"Program plan" means that part of the purchase of service contract which explains in detail who will be served, where and how they will be served and what outcomes are expected from the service.

"Purchase of service provider" means an agency or individual offering services to a Department client through a signed contract with the Department. As used in this Part the term does not include grants-in-aid which are awarded pursuant to 89 Ill. Adm. Code 360, Grants-in-Aid.

"Requests for proposals" (RFPs RFP-s) means a form of invitation to bid which the Department uses to obtain professional services. The bid explains the purpose, outlines the scope of the work and solicits proposals from individuals or organizations for the funding of services for certain initiatives or projects undertaken by the Department.

"Statewide Child Sex Offender Registry" means the registry of felony child sex offenders operated and maintained by the Illinois State Police.

"Youth services" include but are not limited to community services, primary prevention, outreach and recreational opportunities, including the use of indigenous community volunteers to provide programs designed to assist and encourage children and youth to avoid delinquency, including client referrals, family counseling, employment and educational assistance and services, crisis intervention, emergency services, including 24-hour crisis intervention and shelter care services, and other services as further defined in 89 Ill. Adm. Code 310, Delivery of Youth Services Funded by the Department.

(Source: Renumbered from Section 357.2 and amended at 21 Ill. Reg. _____, effective _____.)

Section 357.30 Purchase of Day Care Services

- a) The Department may purchase day care services for an eligible child in any legal child care arrangement including but not limited to licensed day care facilities, facilities exempt from licensure, and relatives and individuals who provide care in the children's homes.

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- b) As a condition of receiving payment for day care services from the Department, each in-home day caregiver, license exempt day care provider, or other person who provides day care services in the household in which a day care home is licensed, must submit fingerprints to the Department and submit to the Department on a form prescribed by the Department a certification under penalty of perjury whether the person has been convicted of a crime, other than a minor traffic violation, or has been indicated as a perpetrator of child abuse and neglect; and
- 2) complete and submit to the Department an authorization for a background check which may include, solely at the discretion of the Department, a criminal history check, a check of the child abuse and neglect tracking system (CANTS), and a check of the Statewide Child Sex Offender Registry; and
- 3) if indicated, submit fingerprints to the Department within 30 days after the Department's written request for such fingerprints.

c) The Department shall conduct a CANTS check on all individuals in Section 357.30(b) above when:

- 1) care is being given to a child for whom the Department is legally responsible;
- 2) a child is a member of an intact family which is receiving Department services; and
- 3) one of the individuals required to complete the authorization for background checks as provided in Section 357.30(b) acknowledges that the care has been indicated as a perpetrator of child abuse or neglect.
- d) The Department shall conduct CANTS checks on a random basis for all other individuals required to complete the authorization for background checks in Section 357.30(b).

e) The Department shall send a notice to the individuals in Section 357.30(b) requiring them to submit to fingerprinting whenever he or she acknowledges that he or she has been convicted of a crime, other than a minor traffic violation, as defined in Section 357.20.

f) The Department may, in its sole discretion and on a random basis, require the submission of fingerprints from all other individuals in subsection (b) of this section and submit the fingerprints to the Illinois State Police.

g) Authorization for payment for day care services shall be denied or withdrawn whenever an individual in subsection (b) of this section:

- 1) failed or refused to submit the authorization for background checks and fingerprints (if requested), as required by subsection (b) of this section; or
- 2) is found to have been convicted of any of the criminal acts listed in Appendix A of 89 Ill. Adm. Code 385. Background checks indicated as the perpetrator of child abuse or neglect which are licensed under Part 397 or listed in the Statewide

DEPARTMENT OF CHILDREN AND FAMILY SERVICES

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Child Sex Offender Registry.

- b) In addition, if the Department learns one of the individuals in subsection (d) of this Section has falsified information on the certification (ID) of this Section, deny or withdraw authorization for payment for day care services to that provider.

(Source: Added at 21 Ill. Reg. _____, effective _____)

Section 357.40 Procuring Services

- a) The Department procures professional child welfare and youth services by means of negotiated contracts and competitively bid contracts.
 b) Negotiated contracts are used in the following circumstances:
 1) When the nature of the service is such that it can only be obtained from a single service provider.
 2) When, in the opinion of the Department, maintenance of ongoing established services is necessary to ensure the continuity of care and assistance to children, youth and families served by the Department.
 3) When, in the opinion of the Department, an emergency exists and the urgency for the service will not allow time for preparing requests for proposals.
 4) When the Department is not required to use competitive bidding by statute or by the provisions of subsection (c)(1) below:
 c) Although the professional services governed by this Part are exempt from the competitive bidding procedures of the Illinois Purchasing Act [30 ILCS 505] (4411-Rev-Stat-1987, ch-1377-par-138-1-et-seq) as opposed to the goods and services governed by the standard procurement rules of the Department of Central Management Services, the Department nevertheless recognizes the value of competition and therefore issues Request for Proposals (RFPs RFPs) in the following situations:

- 1) The Department shall issue a Request for Proposal (RFP) for all new service initiatives that cost more than \$50,000 and the RFP shall include the following regulations such as 45 CFR 74. The Director shall waive the RFP requirements when a determination is made that an emergency exists. An emergency shall include, but not be limited to, the following situations:

- A) When the service initiative is immediately needed to prevent interruption in services to current clients, or
 - B) The service initiative is immediately needed to assure the clients' health and welfare.
- 2) In addition, the Department shall issue RFPs RFPs for service contracts (except for substitute care and day care) over \$50,000 at least once every six years. However, comprehensive community-based youth services provided through local boards or local service systems shall be reviewed once every four years in accordance with 89 Ill. Adm. Code 334, Administration and Funding

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of Community-Based Services to Youth. When requests for proposals are issued, purchase of service providers shall submit a response in accordance with the RFP in order to be considered for contracts for the fiscal year specified. When an RFP is not required, subsequent contracts may be negotiated and renewed at the Department's discretion without recourse to a RFP. The Department will review all contracts to determine that the provider is complying with the provisions of the contract and providing effective services which meet the needs of the Department's clients.

- 3) When equal proposals for family preservation services have been submitted to the Department, not-for-profit corporations are to be given preference over for-profit corporations.

(Source: Renumbered from Section 357.3 and amended at 21 Ill. Reg. _____, effective _____)

Section 357.50 Issuance of Requests for Proposals

The Department shall ensure that RFPs RFPs are issued to current purchase of service contractors and issued in a manner that the development of needed new services will be encouraged and that new contractors will be encouraged to submit proposals. RFPs RFPs shall be advertised in an official newspaper in the State of Illinois as designated by the Department of Central Management Services or a local newspaper serving the geographical area covered by the RFP. The Department shall also maintain a list of potential bidders and will mail RFPs RFPs to potential bidders. A minimum of 30 days to respond to RFPs RFPs shall be allowed.

(Source: Renumbered from Section 357.4 and amended at 21 Ill. Reg. _____, effective _____)

Section 357.60 Content of Requests for Proposals

- a) Requests for proposals will be in writing and contain the necessary information to enable a prospective provider to prepare a proposal.

The RFP shall include:

- 1) A description of the work to be performed.
 - 2) The submission process.
 - 3) The review process.
 - 4) General contact and bid information.
 - 5) Date, time and address of bidders' conference when applicable.
 - 6) The Department contact person.
- b) Requests for proposals will inform prospective providers of all evaluation factors and of the relative importance attached to each criterion.

(Source: Renumbered from Section 357.5 at 21 Ill. Reg. _____)

DEPARTMENT OF CHILDREN AND FAMILY SERVICES

NOTICE OF PROPOSED AMENDMENTS

effective _____,

Section 357.70. Evaluation of Proposals

When deciding which applicant shall be awarded a contract, the Department shall consider the following factors:

- The type of services to be provided as described in the RFP;
- The target population for which their services are intended as described in the RFP;
- The experience and ability of the provider's staff as described in the RFP;
- The cost-effectiveness of the program;
- The reliability of the service delivery model as described in the RFP; and
- The need for the service in that geographical area.

(Source: Renumbered from Section 357.6 at 21 Ill. Reg. _____, effective _____.)

Section 357.80. Notification of Awards

- After the evaluation of proposals has been completed, the Department will notify in writing the applicant(s) selected as well as those not selected.
- Upon written request of an unsuccessful applicant, the Department will describe the reasons for rejection.

(Source: Renumbered from Section 357.7 at 21 Ill. Reg. _____, effective _____.)

Section 357.90. Disclosure of Proposals

All proposals received pursuant to a request for proposal become the property of the Department.

(Source: Renumbered from Section 357.8 at 21 Ill. Reg. _____, effective _____.)

Section 357.100. Contract Approval

Federal and State regulations authorize the Illinois Department of Children and Family Services to purchase service and care for eligible children and families from purchase of service providers. Purchase of service providers shall meet the following prerequisites before a contract is approved:

- When licensure is required to provide the service, the purchase of the service must be obtained from the necessary license or permit from the appropriate licensing authority to provide the specified services throughout the contract period.

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- Except for individual foster care provider contracts and day care contracts, the purchase of service providers shall be limited to the following:
 - The type and extent of services which will be provided.
 - The number of individual and/or family clients which may be served, and the number of hours or the number of days for which services are provided may be used to define the extent of services;
 - The number and types of staff available to provide the specified services;
 - The clientele for whom the services were designed;
 - The provisions for recordkeeping and reporting as required by Department rules or the purchase of service contract;
 - That the response is sufficient to provide the service.

"The following are the minimum requirements for the purchase of service providers:

- Facilities which are large enough to safely accommodate the clientele, which contain sufficient equipment and furniture to provide the services offered and which satisfy all public health and safety regulations and Department licensing requirements;
- Staff who possess accepted professional standards of education and experience for their assignments; and
- Administrative personnel with appropriate educational backgrounds and experience for their position;
- A clause titled "billable services" which:
 - states that the billable unit of services such as one hour, day, week or month;
 - stipulates whether the provider will bill for client "no shows," travel, telephone conversations, cancelled appointments, staffing and group sessions.
- The purchase of service provider has a plan to assure that minimal staffing levels, as may be required by child care facility licensing standards, and as specified in the contract, are maintained.
- The purchase of service provider shall submit documentation that the total Department reimbursement for administration costs, including personnel and other fixed and variable costs for administration do not exceed 20% of the total cost of the service.
- The purchase of service provider has submitted evidence of financial stability for the contract period including either balance sheet data and income statement or reconciled blank balances. If the provider has been receiving contracts that in the aggregate are \$25,000 or more the balance sheet and income statement must be audited.
- The new purchase of service provider has submitted evidence of financial stability for the contract period including either letters of credit, statements of banking, or audited financial statements.
- The purchase of service provider has submitted a budget of anticipated expenditures based on the negotiated rate of the negotiated contract maximum, if a budget is required by the contract.

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(Source: Renumbered from Section 357.9 and amended at 21 Ill. Reg. _____, effective _____)

Section 357.110 Compliance During the Contract Period

Purchase of service providers under contract to the Department must comply with Federal and State laws and regulations and Department rules when the provider is performing services. The Department shall be responsible for obtaining and certification of compliance with the applicable laws, regulations and rules. In addition, the Department may certify compliance by reviewing the purchase of service providers' records.

(Source: Renumbered from 357.10 at 21 Ill. Reg. _____, effective _____)

Section 357.120 Fiscal Reports and Records

a) Purchase of service providers shall furnish the Department with any detail reports during the contract period. These reports shall detail functional expenses, revenues, and per person costs in a manner specified by the Department. Reports shall be received by the Department within 30 days after the expiration of the contract. b) When the contract expires or terminates prior to the end of the fiscal year, a report shall be submitted within 30 days after the expiration or termination of the contract.

c) Any purchase of service provider (with the exception of day care providers) who receives more than \$50,000 from the Department within a fiscal year shall submit a certified independent audit using the guidelines developed by the Department. Day care purchase of service providers who receive more than \$50,000 from the Department's Local Effort or Donated Initiative Funds within a fiscal year shall submit a certified independent audit using the guidelines developed by the Department. The Director or Chief Auditor of the Department shall waive audit requirements when a contract is with an individual provider and payments are not related to expenses. The Department may waive audit requirements when a contract is with an individual provider who receives less than \$50,000 from the Department within a fiscal year from day care providers who receive more than \$50,000 within a fiscal year from Department funds other than Local Effort or Donated Initiative Funds to ensure compliance with Federal, State and Department requirements. The audit shall contain the following information:

- 1) an expression of the auditor's opinion on the financial statement;
- 2) a balance sheet;
- 3) a statement of revenue and expenses and changes in fund balance.

This statement should specifically identify revenue received from

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the Department programs(s). The cost of management and general Management-and-General expenses is to be shown; a statement of functional expenses (expenses by program) in a multiple program agency; statements which include includes a note notes on the following the total number of service units provided incurred in either hours, days, weeks, or months; 6) reports on review of internal controls; 7) report on compliance; and 8) a management letter from the certified independent audit firm which specifies those accounting and internal control deficiencies which merit attention.

d) Purchase of service providers shall maintain financial records for five years from the expiration of each contract. The Department reserves the right to inspect all purchase of service records which relate to services for which the Department provides funding. These records shall be kept according to the Standards of Accounting and Financial Reporting for Voluntary Health and Welfare Organizations, 1988 publication of the National Health and Welfare Organizations or National Health and Welfare Organizations, Inc., and the United Way of America. These standards require accrual accounting. This incorporation by reference rate does not include any later amendments or editions to the previously cited publication.

e) Reports are necessary to enable an evaluation of the costs for all providers offering the same services. Unless the Department determines that circumstances do not warrant the following action, noncompliance with fiscal reporting requirements will result in:

- 1) withholding of rate increases, if the provider does not comply with the fiscal reporting requirements as specified in the contract; or

2) withholding of rate increases and non-renewal of the purchase of service contract, if the provider does not comply with the end of year fiscal reporting requirements. Circumstances do not warrant the following action, if the provider submits the required audit, which must result in: within 180 days after the end of the fiscal year, will result in:

- 1) non-renewal of the purchase of service contract, or
- 2) termination of the purchase of service contract, or
- 3) withholding of current contract payments for services provided.

Such withholding of payments will occur 60 days after the provider has received written notice of the pending action from the Director of the Department.

(Source: Renumbered from Section 357.11 and amended at 21 Ill. Reg. _____, effective _____)

Section 357.130 Required Documentation

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- a) Purchase of service providers are required to keep records which are detailed and accurate enough to document the reasons for a decision, the ways monies were spent, and the beneficiaries of income, goods, and services. Such required record keeping shall include but not be limited to:
- 1) establishment of financial record keeping which includes:
 - A) Cash Receipts Journal
 - B) Cash Disbursements Journal
 - C) General Journal
 - D) General Ledger
 - E) All cash disbursements and/or expenses must be fully supported by documentation, such as invoices, time sheets, employee studies, or approved cost allocation plans.
 - 2) establishment of programmatic compliance record keeping which includes:
 - A) Individual client files on each client applying for and receiving service,
 - B) Schedule of service provided to each client which includes the date and time service was provided, and the agency's employee providing service.
 - b) Purchase of service providers shall maintain individual client records for clients for whom services were purchased by the Department five years from the date services are terminated. Individual client records shall contain:
 - 1) the original referral from the Department or in the case of funded day care facilities the documentation of need for services and the provider's responsibility to gather it or if the Department submitted it to the provider;
 - 2) documentation which supports Title IV-E and XIX (42 CFR 431) eligibility determinations and redeterminations, as appropriate, if it was the provider's responsibility to gather it or if the Department submitted it to the provider;
 - 3) documentation which supports the need for child protective services if it was the provider's responsibility to gather it or if the Department submitted it to the provider;
 - 4) documentation of the service planning goals established when the case was opened and the changes made in the service planning goals as the client's needs changed;
 - 5) documentation of the child and family's progress or lack of progress toward meeting service planning goals including the social service workers' or other staff's observations, reports and official records regarding the child and family's cooperation in meeting service planning goals;
 - 6) basic client social history data if it was the provider's responsibility to gather it or if the Department submitted it to the provider; and
 - 7) any other documentation specifically required in the purchase of service contract.

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- c) Purchase of service providers shall maintain personnel records of all employees who provide direct or supportive services to Department clients. Personnel records shall be maintained on each employee for five years after the termination of employment. The following information shall be maintained:
- 1) proof of educational background including high school or college transcripts or a copy of the diploma; or, if the employee has attended a training program, documentation of the employee's completion of the program;
 - 2) detailed summary of the employee's work experience;
 - 3) at a minimum, yearly employee performance evaluations; sick days, payroll data including salary, accrued vacation and sick days, and travel expense records;
 - 4) documentation that a background check criminal-history-inquiry was completed for each employee in accordance with the Department's rule ratemaking, 89 Ill. Adm. Code 385, Background Checks 89-III-Adm-Code-385-Background-Inquiry-Per-Purchase-of Service-Providers.
- (Source: Renumbered from Section 357.12 and amended at 21 Ill. Reg. _____, effective _____)
- Section 357.140 Contract Termination**
- a) The Department of Children and Family Services and the purchase of service providers reserve the right to terminate purchase of service contracts at any time upon written notice 30 days in advance to the other party. However, if either party fails to comply with the terms of the contract, the contract may be terminated by the other party effective upon the date of written notice of termination.
 - b) The Department shall not be liable for payment for service provided after the contract termination date or after the last child for whom the Department is making payment is removed from the provider's care, which ever is later.
 - c) The agency shall return to the Department all funds received from the Department which are in excess of actual costs of providing the contract services which were delivered before the contract was terminated.
 - d) Any equipment exceeding \$300 market value at the time of purchase shall be returned to the Department in full. Any State or Federal funds that the Department administrators shall be returned to the State upon contract termination.
- (Source: Renumbered from Section 357.13 at 21 Ill. Reg. _____, effective _____)

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1) Heading of the Part: Tiered Approach to Corrective Action Objectives

2) Code Citation: 35 Ill. Adm. Code 742

3) Section Numbers: Proposed Action:

742.100	New
742.105	New
742.110	New
742.115	New
742.120	New
742.125	New
742.130	New
742.135	New
742.140	New
742.145	New
742.150	New
742.155	New
742.160	New
742.165	New
742.170	New
742.175	New
742.180	New
742.185	New
742.190	New
742.195	New
742.200	New
742.205	New
742.210	New
742.215	New
742.220	New
742.225	New
742.230	New
742.235	New
742.240	New
742.245	New
742.250	New
742.255	New
742.260	New
742.265	New
742.270	New
742.275	New
742.280	New
742.285	New
742.290	New
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742.300	New
742.305	New
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742.450	New
742.455	New
742.460	New
742.465	New
742.470	New
742.475	New
742.480	New
742.485	New
742.490	New
742.495	New
742.500	New
742.505	New
742.510	New
742.515	New
742.520	New
742.525	New
742.530	New
742.535	New

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742.1000	New
742.1005	New
742.1010	New
742.1015	New
742.1020	New
742.1100	New
742.1105	New
742.APPENDIX A	New
Table A	New
Table B	New
Table C	New
Table D	New
Table E	New
Table F	New
Illustration A	New
Illustration B	New
742.APPENDIX B	New
Table A	New
Table B	New
Table C	New
Table D	New
Table E	New
Table F	New
742.APPENDIX C	New
Table A	New
Table B	New
Table C	New
Table D	New
Table E	New
Table F	New
Table G	New
Table H	New
Table I	New
Table J	New
Table K	New
Illustration A	New
Illustration B	New
Illustration C	New
742.APPENDIX D	New

4) Statutory Authority: 415 ILCS 5/27, 28 and 58.11(c)

5) Complete Description of the Subjects and Issues Involved: This proposal for rulemaking is being filed with the Pollution Control Board by the Illinois Environmental Protection Agency (Agency) in response to a directive of the Legislature in 1981, which was signed and effective December 15, 1981. The Agency has established a "Site Remediation Act" (Act), entitled "Site Remediation Act (act)", entitled "Site Remediation

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Program" found at 415 ICSS 5/58 - 58.12. It also directed the Agency to propose, and the Board to adopt, regulations and procedures for administering the new site remediation program, including regulations establishing procedures for the development of risk-based corrective action objectives for remediation sites. Pursuant to P.A. 89-431, the Board is required to complete this rulemaking on or before June 5, 1997.

The proposed rules would establish procedures for developing corrective action objectives for soil and groundwater at remediation sites, based on risks to human health and the environment, taking into account the existing pathways for human exposure, and allowing consideration of the proposed land use for the remediation site. The proposed methodology consists of three possible levels, or tiers, of analysis.

A tier 1 analysis requires the remediation applicant to compare contamination levels of constituents of concern at the remediation site to pre-determined remediation objectives. The pre-determined remediation objectives are listed in the proposed rules in Appendix B, Tables A and B, and are connected at the remediation site to the standard to exceed the pre-determined level of the remediation objective would be required to remediate the contamination until the corrective action objectives are achieved, or alternatively, to develop site-specific remediation objectives using a tier 2 or tier 3 analysis.

A tier 2 analysis uses equations set forth in the proposed rules to develop alternative remediation objectives for constituents of concern, using site-specific information. The equations used to develop site-specific remediation objectives are from the Soil Screening Level (SSL) and Risk Based Corrective Action (RBCCA) approaches, and they are contained in the Proposed rules at Appendix C, Tables A and C. If any constituent of concern is found to exceed the remediation objective contained using the tier 2 equations, the remediation applicant would be required to remediate the contamination until the objectives are achieved, or to develop alternative objectives using a tier 3 analysis.

A tier 3 analysis allows a remediation applicant to develop remediation objectives using alternative parameters not found in tier 1 or tier 2. It allows a remediation applicant to use modified parameters, provided the remediation applicant provides justification for the modification, and the technical and mathematical basis for the modification. Additionally, a tier 3 analysis allows a remediation applicant to use alternative models (i.e., the mathematical and physical models used in the model) and the mathematical and physical models used in the model, and a demonstration that the model was correctly applied. If any contaminants of concern are found to exceed the remediation objectives developed using the tier 3 analysis, the remediation applicant would be required to remediate the contamination until the objectives are achieved.

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The proposed tiered approach to establishing remediation objectives would be applicable to all types of remedial actions, including those conducted pursuant to the new Site Remediation Program (known as Brownfields), the Underground Storage Tank (UST) Program, and the Resource Conservation and Recovery Act (RCRA). The proposed tiered approach would be intended to be used to develop remediation objectives for use in conducting remedial actions. To use the proposed rules with the program-specific procedures established for each type of remedial action.

A separate rulemaking proposal establishing procedures for a site remediation program is currently pending before the Board, docketed as R97-11, "In the Matter of: Site Remediation Program (35 Ill. Adm. Code 740)". This proposal will be proceeding and noticed separately. Additionally, the proposed approach for establishing corrective action objectives will be applicable to remedial actions conducted pursuant to proposed amendments to the UST regulations, which are currently pending before the Board as R97-12, "In the Matter of: Regulation of Petroleum Underground Storage Tanks (35 Ill. Adm. Code 732)". These amendments will also be proceeding and noticed separately.

6) Will this proposed rule replace an emergency rule currently in effect? No

7) Does this rulemaking contain an automatic repeal date? No

8) Does this proposed rule (amendment, regulation) contain incorporations by reference? Yes. This Part includes a number of incorporations by reference, including American Society for Testing and Materials (ASTM) documents, United States Environmental Protection Agency (USEPA) guidelines, International Technical Information Services (NTIS) documents, and other documents.

A complete listing of incorporations by reference for Part 742 is contained in proposed Section 742.210.

9) Are there any other proposed amendments pending on this Part? No

10) Statement of Policy Objectives: These proposed rules are required by P.A. 89-431, and do not create or enlarge a State's administrative, as defined in Section 3(b) of the State Mandate Act [30 ILCS 805/3(b)].

11) Time, place, and manner in which interested persons may comment on this proposed rulemaking: Written comments concerning this rulemaking should reference R97-12, and should be sent to:

Dorothy Gunn
Clerk of the Pollution Control Board
100 West Randolph Street

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Suite 11-500
Chicago, IL 60601
(312) 814-6931

Kimberly Robinson
Assistant Counsel
Illinois Environmental Protection Agency
Division of Legal Counsel
P.O. Box 19276
Springfield, IL 62794-9276
(217) 782-3544

Questions regarding this proposed rule may be addressed to: Kevin G. Desbarnals, Attorney Assistant, Illinois Pollution Control Board, 100 West Randolph Street, Suite 11-500, Chicago, Illinois 60601, (312) 814-6926.

- 12) Initial Regulatory Flexibility Analysis: This proposal is mandated by Section 58.11(c) of the Environmental Protection Act (415 ILCS 5/58.11(c)), as added by P.A. 89-431 (1995).

A) TYPES of small businesses affected: The proposed tiered approach to establishing corrective action objectives would be applicable to any small business conducting remedial actions pursuant to any remediation programs under the Environmental Protection Act, including, but not limited to, the newly proposed Site Remediation Program, the Underground Storage Tank Program, and the Resource Conservation and Recovery Act.

- B) Retention, bookkeeping or other procedures required for compliance:
None

- C) TYPES of professional skills necessary for compliance: None

- 13) Regulatory Agenda on which this rulemaking was summarized: July 1996

The full text of the Proposed Rule(s) begins on the next page:

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TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE G: WASTE DISPOSAL
CHAPTER 1: POLLUTION CONTROL BOARD
SUBCHAPTER f: RISK BASED CLEANUP OBJECTIVES

and

PART 742

TIERED APPROACH TO CORRECTIVE ACTION OBJECTIVES

SUBPART A: INTRODUCTION

Section
742.100 Intent and Purpose
742.101 Applicability
742.110 Overview of Tiered Approach
742.115 Key Elements
742.120 Site Characterization

SUBPART B: GENERAL

Section
742.200 Definitions
742.205 Severability
742.210 Incorporations by Reference
742.215 Determination of Soil Attenuation Capacity
742.220 Determination of Soil Saturation Limit
742.225 Determination of Compliance with Remediation Objectives
742.230 Agency Review and Approval

SUBPART C: EXPOSURE ROUTE EVALUATIONS

Section
742.300 General
742.305 Contaminant and Free Product Determination
742.310 Inhalation Exposure Route
742.315 Soil Ingestion Exposure Route
742.320 Groundwater Ingestion Exposure Route

SUBPART D: DETERMINING AREA BACKGROUND

Section
742.400 General
742.405 Determination of Area Background for Soil
742.410 Determination of Area Background for Groundwater
742.415 Use of Area Background Concentrations

SUBPART E: TIER 1 EVALUATION

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Section
742.500 Introduction
742.501 Tier 1 Soil and Groundwater Remediation Objectives
742.510 Tier 1 Tables

SUBPART F: TIER 2 GENERAL EVALUATION

Section
742.600 Introduction
742.601 Land Use
742.605 Chemicals with Cumulative Noncarcinogenic Effects
742.610 Chemical and Site Properties
742.615
SUBPART G: TIER 2 SOIL EVALUATION
Section
742.700 Overview
742.705 Parameters for Soil Remediation Objective Equations
742.710 SSL Soil Equations
742.715 RCRA Soil Equations

SUBPART H: TIER 2 GROUNDWATER EVALUATION

Section
742.800 General
742.801 Tier 2 Groundwater Remediation Objectives
742.810 Calculations to Predict Impacts from Remaining Groundwater Contamination

SUBPART I: TIER 3 EVALUATION

Section
742.900 Introduction
742.901 Modifications of Parameters
742.910 Alternative Models
742.915 Formal Risk Assessments
742.920 Impractical Remediation
742.925 Exposure Routes
742.930 Derivation of Toxicological Data
742.935 Agricultural Uses and Ecological Receptors (Reserved)

SUBPART J: INSTITUTIONAL CONTROLS

Section
742.1000 General
742.1001 No Further Remediation Letters
742.1010 Restrictive Covenants, Deed Restrictions and Negative Easements
742.1015 Ordinances
742.1020 Highway Authority Agreements

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SUBPART K: ENGINEERED BARRIERS

Section
742.1100 General
742.1105 Engineered Barrier Requirements

742.APPENDIX A General

TABLE A Soil Saturation Limits (Csat) for Chemicals Whose Melting Point is Less Than 30°C
TABLE B Tolerance Factor (K)
TABLE C Percentage Points of the W Test for Normality, for N=2(1)50
TABLE D Percentage Points of the W Test for N=3(1)50
TABLE E SSL Chemicals with Noncarcinogenic Toxic Effects on Specific Target Organs/Organ Systems or Similar Modes of Action
TABLE F Range of Concentrations of Inorganic Chemicals in Background Soils
ILLUSTRATION A Developing Soil Remediation Objectives Under the Tiered Approach
ILLUSTRATION B Developing Groundwater Remediation Objectives Under the Tiered Approach

742.APPENDIX B Tier 1 Tables and Illustrations

TABLE A Tier 1 Soil Remediation Objectives(a) for Residential Properties
TABLE B Tier 1 Soil Remediation Objectives(a) for Industrial/Commercial Properties

TABLE C pH Specific Soil Remediation Objectives for Inorganics and Ionizing Organics for the Migration to Groundwater Portion of the Groundwater Ingestion Route (Class I Groundwater)
TABLE D pH Specific Soil Remediation Objectives for Inorganics and Ionizing Organics for the Migration to Groundwater Portion of the Groundwater Ingestion Route (Class II Groundwater)
TABLE E Tier 1 Groundwater Remediation Objectives for the Direct Ingestion of Groundwater Portion of the Groundwater Ingestion Route

ILLUSTRATION A Tier 1 Evaluation

APPENDIX C Tier 2 Tables and Illustrations

TABLE A SSL Equations
TABLE B SSL Parameters
TABLE C RCRA Equations
TABLE D RCRA Parameters
TABLE E Default Physical and Chemical Parameters
TABLE F Methods for Determining Physical Soil Parameters
TABLE G Error Function (erf)
TABLE H Q/C Values by Source Area
TABLE I Values to be Substituted for k(s) When Evaluating Ionizing Organics to be Substituted for k(s) When Evaluating Inorganics as a Function of pH
TABLE J Values to be Substituted for k(s) When Evaluating Inorganics as a Function of pH(a)
TABLE K Parameter Estimates for Calculating Water-Filled Soil Porosity (Omega_w)

ILLUSTRATION A Tier 2 Evaluation for Soil

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ILLUSTRATION B Tier 2 Evaluation for Groundwater
 ILLUSTRATION C US Department of Agriculture Soil Texture Classification
 APPENDIX D Procedures for Determination of Class II Groundwater

AUTHORITY: Implementing Sections 22-4, 22-12, Title XVI, and Title XVII and authorized by Sections 27, 57.14, and 58.5 of the Environmental Protection Act [415 ILCS 5/22-4, 22-12, Title XVI and Title XVII] (see P.A. 88-496, effective September 13, 1993 and P.A. 89-431, effective December 15, 1995).

SOURCE: Adopted at 21 Ill. Reg. _____, effective _____.

NOTE: In this Part, superscript numbers or letters are denoted by parentheses; subscript are denoted by brackets; SUM means the summation series or sigma function as used in mathematics; and the English words Alpha, Lambda and Omega are substituted for the Greek symbols because of computer program limitations.

SUBPART A: INTRODUCTION

Section 742.100 Intent and Purpose

- a) This Part sets forth procedures for use in evaluating the risk to human health posed by environmental conditions and in developing objectives for remediation that assure such risks achieve acceptable levels.
- b) The purpose of these procedures is to provide for the adequate protection of human health and the environment based on the risks to human health posed by environmental conditions while incorporating site related information, to the extent practicable, which may allow for more cost-effective site remediation.

Section 742.105 Applicability

- a) Any person, including a person required to perform investigation pursuant to the Illinois Environmental Protection Act [415 ILCS 5] (Act), may elect to proceed under this Part to the extent allowed by State or federal law and regulations and the provisions of this Part. A person proceeding under this Part may do so to the extent such actions are consistent with the requirements of the program under which site remediation is being addressed.
- b) This Part is applicable to the following programs:
 - 1) Leaking Underground Storage Tanks (35 Ill. Adm. Code 731 and 732);
 - 2) Site Remediation Program (35 Ill. Adm. Code 740); and
 - 3) RCRA Part B Permits and Closure Plans (35 Ill. Adm. Code 724 and 725).
- c) The procedures in this Part may not be used if their use would delay

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response action when timeliness is critical to address imminent and substantial threats to human health and the environment. This Part may only be used after actions to address such threats have been completed.

- d) Consistent with the regulations of other programs, and as approved by the Agency, this Part may be used to develop remediation objectives to protect surface waters, sediments, or ecological concerns.
- e) A determination issued by the Agency prior to the effective date of this Part pursuant to Section 4(y) of the Act or one of the programs listed in subsection (b) of this Section that approves completion of remedial action relative to a release shall remain in effect in the event the release is not detected.
- f) Site specific groundwater remediation objectives determined under this Part for contaminants of concern may exceed the groundwater quality standards established pursuant to the rules promulgated under the Illinois Groundwater Protection Act [415 ILCS 55].

BOARD NOTE: Sections 58-5 and 57.7 of the Act authorize the use of groundwater remediation objectives for contaminants of concern that are greater than the groundwater quality standards established pursuant to the Illinois Groundwater Protection Act and rules promulgated thereunder.

- g) The Agency's issuance of a "No Further Remediation" determination pursuant to the requirements applicable to the program under which the remediation is performed shall be considered, while the determination is in effect, prima facie evidence that the contaminants of concern at the site do not, relative to groundwater, cause or tend to cause water pollution under Section 12(d) of the Act or create a water pollution hazard under Section 12(d) of the Act.

Section 742.110 Overview of Tiered Approach

- a) This Part presents an approach to development of remediation objectives (see Appendix A, Illustrations A and B) that includes an option for exclusion of pathways from further consideration, use of area background concentrations as remediation objectives, and three tiers for selecting applicable remediation objectives. An understanding of human exposure routes is necessary to properly conduct an evaluation under this approach. In some cases, human exposure route(s) can be excluded from further consideration prior to any tier evaluation. The option of selecting which tier or combination of tiers shall be used to develop remediation objectives will be dependent on the site specific conditions and remediation goals. The Agency's issuance of a "No Further Remediation" determination is a prerequisite to conducting Tier 3 evaluations.
- b) Tier 1. A Tier 1 evaluation compares the concentration of contaminants detected at a site to the corresponding remediation objectives contained in Appendix B, Tables A, B, C, D, and E. To complete a Tier 1 evaluation, the extent and concentrations of the contaminants of concern, the groundwater class, the land use

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classification, human exposure routes at the site, and, if appropriate, soil pH must be known. If remediation objectives are developed based on industrial/commercial property use, then institutional controls under Subpart J are required.

- c) Tier 2. A Tier 2 evaluation uses the Soil Screening Level (SSL) and Risk Based Corrective Action (RBCA) approaches' risk-based equations listed in Appendix C, Tables A and C, respectively. In addition to the information that is required for a Tier 1 evaluation, remediation objectives must be calculated and used to determine remediation objectives. Remediation objectives are calculated based on the human health based on identified risks and site-specific conditions at the site. Tier 2 also considers the use of institutional controls or engineered barriers and institutional controls in accordance with Subparts J and K.

- d) Tier 3. A Tier 3 evaluation allows alternative parameters and factors, not available under a Tier 1 evaluation or a Tier 2 evaluation, to be considered when developing remediation objectives. A Tier 3 evaluation can be simple or complex depending on the remediation method and the site conditions.

- e) Remediation objectives developed using area background concentrations or any of the three tiers may be used if the evaluation is conducted in accordance with applicable requirements in Subparts D through I. Remediation objectives developed using area background concentrations or remediation objectives under any of the tiers, evaluation under any of the other tiers is not required.

Section 742.115 Key Elements

To develop remediation objectives under this Part, the following key elements shall be addressed.

- a) Exposure Routes

- 1) This Part identifies the following as potential exposure routes to be addressed:

- Inhalation;
- Soil ingestion;
- Groundwater ingestion; and
- Dermal contact with soil.

- 2) The evaluation of exposure routes under subsections (a)(1)(A), (a)(1)(B), and (a)(1)(C) of this Section is required for all sites when developing remediation objectives or excluding exposure pathways. Evaluation of the dermal contact exposure route is required for use of RBCA equations in Appendix C, Table C or use of formal risk assessment under Section 742.915.

- 3) The groundwater ingestion exposure route is comprised of two portions:

- Migration to Groundwater (Soil Component); and
- Direct Ingestion of Groundwater (Groundwater Component).

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- b) Contaminants of Concern

The contaminants of concern to be remediated depend on the following:

- The materials and wastes managed at the site;
- The extent of the determination being requested from the Agency, and
- The requirements applicable to the specific program under which the remediation is being performed.

- c) Land Use and Post-remediation Use of the Site Where Exposure May Occur. The land use and post-remediation use of a site, or portion thereof, shall be classified as one of the following:
- Residential property;
 - Conservation property;
 - Agricultural property; or
 - Industrial/commercial property.

Section 742.120 Site Characterization

Characterization of the extent and concentrations of contamination at a site shall be performed before beginning development of remediation objectives. The actual steps and methods taken to characterize a site are determined by the requirements applicable to the program under which site remediation is being addressed.

SUBPART B: GENERAL

Section 742.200 Definitions

Except as stated in this Section, or unless a different meaning of a word or term is clear from the context, the definition of words or terms in this Part shall be the same as that applied to the same words or terms in the Act.

"Act" means the Illinois Environmental Protection Act (415 ILCS 5).

"ADI" means Acceptable Detection Limit, which is the detectable concentration of a substance which is equal to the lowest appropriate Practical Quantitation Limit (PQL) as defined in this Section.

"Agency" means the Illinois Environmental Protection Agency.

"Agricultural Property" means any real property for which present or post-remediation use is planned to consist of the growing of agricultural crops for food or feed either as harvested crops, cover crops, or as pasture. This definition includes, but is not limited to, properties used for confinement or grazing of livestock or poultry and for silviculture operations. Excluded from this definition are farm residences, farm outbuildings, and agricultural facilities.

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"Area Background" means concentrations of regulated substances that are consistently present in the environment in the vicinity of a site and the natural conditions or human activities, and not the result solely of releases at the site. (Section 58.2 of the Act)

"ASTM" means the American Society for Testing and Materials.

"Board" means the Illinois Pollution Control Board.

"Cancer Risk" means a unitless probability of an individual developing cancer from a defined exposure rate and frequency.

"Cap" means a barrier designed to prevent the infiltration of precipitation or other surface water, or impede the ingestion or inhalation of contaminants.

"Carcinogen" means a contaminant that is classified as a category A1 or A2 carcinogen by the American Conference of Governmental Industrial Hygienists; International Agency for Research on Cancer; or a "human carcinogen" or "anticipated human carcinogen" by the United States Department of Health and Human Service, National Toxicological Program; or a category A or B1/B2 carcinogen by the United States Environmental Protection Agency in Integrated risk information system or a final rule issued in a Federal Register notice by the USEPA. (Section 58.2 of the Act)

"Class I Groundwater" means groundwater that meets the Class I Potable Resource Groundwater criteria set forth in 35 Ill. Adm. Code 620.

"Class II Groundwater" means groundwater that meets the Class II General Resource Groundwater criteria set forth in 35 Ill. Adm. Code 620.

"Conservation Property" means any real property for which present or post-remediation use is primarily for wildlife habitat.

"Construction Worker Population" means a situation where persons are engaged on a temporary basis to perform work involving invasive construction activities including, but not limited to, personnel performing demolition, earth-moving, building, and routine and emergency utility installation or repair activities.

"Contaminant of Concern" or "Regulated Substance of Concern" means any contaminant that is expected to be present at the site based upon past and current land uses and associated releases that are known to the person conducting a remediation based upon reasonable inquiry.

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(Section 58.2 of the Act)

"Engineered Barrier" means a barrier designed or verified using engineering practices that limits exposure to or controls migration of the contaminants of concern.

"Exposure Route" means the transport mechanism by which a contaminant of concern reaches a receptor.

"Free Product" means a contaminant that is present as a non-aqueous phase liquid for chemicals whose melting point is less than 30°C (e.g., liquid not dissolved in water).

"Groundwater" means underground water which occurs within the saturated zone and geologic materials where the fluid pressure in the pore space is equal to or greater than atmospheric pressure. (Section 3.64 of the Act)

"Groundwater Quality Standards" means the standards for groundwater as set forth in 35 Ill. Adm. Code 620.

"Hazard Quotient" means the ratio of a single substance exposure level during a specified time period to a reference dose for that substance derived from a similar exposure period.

"Human Exposure Pathway" means a physical condition which may allow for a risk to human health based on the presence of all of the following: contaminants of concern; an exposure route; and a receptor activity at the point of exposure that could result in contaminant of concern intake.

"Industrial/Commercial Property" means any real property that does not meet the definition of residential property, conservation property, or agricultural property.

"Infiltration" means the amount of water entering into the ground as a result of precipitation.

"Institutional Control" means a legal mechanism for imposing a restriction on land use, as described in Subpart J.

"Man-Made Pathways" means constructed physical conditions that may allow for the transport of regulated substances including, but not limited to, sewers, utility lines, utility vaults, building foundations, basements, crawl spaces, drainage ditches, or previously excavated and filled areas. (Section 58.2 of the Act)

"Natural Pathways" means natural physical conditions that may allow

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for the transport of regulated substances including, but not limited to, soil, groundwater, sand seams and lenses, and gravel seams and lenses. (Section 58.2 of the Act)

"Negative Easement" means a right in the owner of the dominant or benefited estate or property to restrict the property rights of the owner of the servient or burdened estate or property.

"Person" means an individual, trust, firm, joint stock company, joint venture, partnership, commercial corporation, association, partnership, government corporation, partnership, association, or any municipality, commission, political subdivision of a state, or any interstate body including the United States government and each department, agency, and instrumentality of the United States. (Section 58.2 of the Act)

"Point of Human Exposure" means the point(s) at which human exposure to a contaminant of concern may reasonably be expected to occur. The point of human exposure is at the source, unless an institutional control limiting human exposure for the applicable exposure route has been put in place, in which case the point of human exposure will be the point of release of the contaminant from the point of release. Human exposure may be at a different location than the point of compliance.

"PQL" means Practical Quantitation Limit or Estimated Quantitation Limit, which is the lowest concentration that can be reliably measured within specified limits of precision and accuracy for a specific laboratory analytical method during routine laboratory operating conditions in accordance with "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", EPA Publication No. SW-846, incorporated by reference in Section 742.210. When applied to filtered water samples, PQL includes the Method Detection Limit or the detection limit for the specific contaminant of concern. The revision in "Methods for the Determination of Organic Compounds in Drinking Water, Supplement IV", EPA Publication No. EPA/600/4-88/039; "Methods for the Determination of Organic Compounds in Drinking Water, Supplement III", EPA Publication No. EPA/600/R-95/131, all of which are incorporated by reference in Section 742.210.

"RBCA" means Risk Based Corrective Action as defined in ASTM E-1739-95, as incorporated by reference in Section 742.210.

"RCRA" means the Resource Conservation and Recovery Act of 1976 (as amended)(42 U.S.C. Sec. 6921 et seq.).

"Reference Concentration (Rfco)" means an estimate of a daily exposure, in units of milligrams of chemical per cubic meter of air (mg/m³), to the human population (including sensitive subgroups) that is

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likely to be without appreciable risk of deleterious effects during a portion of a lifetime (up to approximately seven years, subchronic) or for a lifetime (chronic).

"Reference Dose (RfD)" means an estimate of a daily exposure, in units of milligrams of chemical per kilogram of body weight per day (mg/kg/d), to the human population (including sensitive subgroups) that is likely to be without appreciable risk of deleterious effects during a portion of a lifetime (up to approximately seven years, subchronic) or for a lifetime (chronic).

"Regulated Substance" means any hazardous substance as defined under Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (P.L. 96-510) and petroleum products including crude oil or any fraction thereof, natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas). (Section 58.2 of the Act)

"Residential Property" means any real property that is used for habitation by individuals or properties where children have the potential for frequent and prolonged contact through ingestion or inhalation at educational facilities, health care facilities, child care facilities, or playgrounds.

"Restrictive Covenant or Deed Restriction" means a provision placed in a deed limiting the use of the property and prohibiting certain uses. (Black's Law Dictionary, 5th Edition)

"Site" means any single location, place, tract of land or parcel of property, or portion thereof, including contiguous property separated by a public right-of-way. (Section 58.2 of the Act)

"Slurry Wall" means a man-made barrier made of geologic material which is constructed to prevent or impede the movement of contamination into a certain area.

"Soil Saturation Limit (Csat)" means the contaminant concentration at which soil pore air and pore water are saturated with the chemical and the adsorptive limits of the soil particles have been reached.

"Solubility" means a chemical specific maximum amount of solute that can dissolve in a specific amount of solvent (groundwater) at a specific temperature.

"SSL" means Soil Screening Levels as defined in USEPA's Soil Screening Guidance: User's Guide and Technical Background Document, as incorporated by reference in Section 742.210.

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"Stratigraphic Unit" means a site-specific geologic unit of native deposited material and/or bedrock of varying thickness (e.g., sand, gravel, silt, clay, bedrock, etc.). A change in stratigraphic unit is recognized by a clearly distinct contrast in geologic material or a change in physical features within a zone of gradation. For the purposes of this Part, a change in stratigraphic unit is identified by one or a combination of differences in physical features such as texture, cementation, fabric, composition, density, and/or permeability of the native material and/or bedrock.

"CLP" means Toxicity Characteristic Leaching Procedure (Method 1311) as published in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," OSRP Publication number SW-846, as incorporated by reference in Section 742.210.

"Total Petroleum Hydrocarbon (TPH)" means the additive total of all petroleum hydrocarbons found in an analytical sample.

"Volatile Organic Compounds (VOCs)" means organic chemical analytes identified as volatiles as published in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA Publication number SW-846 (incorporated by reference in Section 742.210), method numbers 8010, 8011, 8015, 8020, 8031, 8036, 8240, 8315, and 8316. For analytes not listed in any category in those methods, those analytes which have a boiling point less than 200°C and a vapor pressure greater than 0.1 Torr (mm Hg) at 20°C.

Section 742.205 Severability

If any provision of this Part or its application to any person or under any circumstances is adjudged invalid, such adjudication shall not affect the validity of this Part as a whole or any portion not adjudged invalid.

Section 742.210 Incorporations by Reference

- a) The Board incorporates the following material by reference:

ASTM. American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103, (215) 299-5400

ASTM D 2974-87, Standard Test Methods for Moisture, Ash and Organic Matter or Test and Other Organic Soils, approved May 29, 1987 (reapproved 1993).

ASTM D 2488-93, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), approved September 15, 1993.

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ASTM D 1566-90, Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method, approved June 29, 1990.
ASTM D 2167-94, Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method, approved March 15, 1994.

ASTM D 2922-91, Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth), approved December 23, 1991.

ASTM D 2937-94, Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method, approved June 15, 1994.

ASTM D 854-92, Standard Test Method for Specific Gravity of Soils, approved November 15, 1992.

ASTM D 2216-92, Standard Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock, approved June 15, 1992.

ASTM D 4959-89, Standard Test Method for Determination of Water (Moisture) Content of Soil by Direct Heating Method, approved June 30, 1989 (reapproved 1994).

ASTM D 4643-93, Standard Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method, approved July 15, 1993.

ASTM D 5084-90, Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter, approved June 29, 1990.

ASTM D 422-63, Standard Test Method for Particle-Size Analysis of Soils, approved November 21, 1963 (reapproved 1990).

ASTM D 1140-92, Standard Test Method for Amount of Material in Soils Finer than the No. 200 (75 μ m) Sieve, approved November 15, 1992.

ASTM D 3017-88, Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth), approved May 27, 1988.

ASTM D 4525-90, Standard Test Method for Permeability of Rocks by Flowing Air, approved May 25, 1990.

ASTM D 2487-93, Standard Test Method for Classification of Soils

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for Engineering purposes, approved September 15, 1993.

ASTM E 1527-93, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, approved March 15, 1993. Vol. 11.04.

ASTM E 1739-95, Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites, approved September 10, 1995.

Barnes, Donald G. and Doursoun, Michael. (1988). Reference Dose (RfD): Description and Use in Health Risk Assessments. Regulatory Toxicology and Pharmacology. 8, 471-486.

GPO. Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20401. (202) 783-3238.

USEPA Guidelines for Carcinogenic Risk Assessment, 51 Fed. Reg. 33992-34003 (September 24, 1986).

"Test Methods for Evaluating Solid Waste. Physical/Chemical Methods," USEPA Publication number SW-846 (Third Edition, November 1986), as amended by Updates I and IIA (Document Number 955-001-00000-1)(contact USEPA, Office of Solid Waste, for Update IIA).

"Methods for the Determination of Organic Compounds in Drinking Water", EPA Publication No. EPA/600/4-88/039 (December 1988 (Revised July 1991)).

"Methods for the Determination of Organic Compounds in Drinking Water, Supplement II", EPA Publication No. EPA/600/R-92/129 (August 1992).

"Methods for the Determination of Organic Compounds in Drinking Water, Supplement III", EPA Publication No. EPA/600/R-95/131 (August 1995).

IRIS. Integrated Risk Information System, National Center for Environmental Assessment, U.S. Environmental Protection Agency, 26 West Martin Luther King Drive, MS-190, Cincinnati, OH 45268, (513) 569-7254.

"Reference Dose (RfD): Description and Use in Health Risk Assessments", Background Document 1A (March 15, 1993).

"EPA Approach for Assessing the Risks Associated with Chronic Exposures to Carcinogens", Background Document 2 (January 17, 1992).

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Neison, D.W., and L.E. Sommers. 1982. Total carbon, organic carbon, and organic matter. In: A.L. Page (ed.), Methods of Soil Analysis. Part 2. Chemical and Microbiological Properties. 2nd Edition, pp 539-579, American Society of Agronomy. Madison, WI.

NHIS. National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161, (703) 487-4000.

"Dermal Exposure Assessment: Principle's and Applications", EPA Publication No. EPA/600/R-91/011B (January 1992).

"Exposure Factors Handbook", EPA Publication No. EPA/600/R-89/043 (July 1989).

"Risk Assessment Guidance for Superfund, Vol. I: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors", OSWER Directive 9285.6-03 (March 1991).

"Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A)", Interim Final, EPA Publication No. EPA/540/1-89/002 (December 1989).

"Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Supplemental Guidance, Dermal Risk Assessment Interim Guidance", Draft (August 18, 1992).

"Soil Screening Guidance: Technical Background Document", EPA Publication No. EPA/540/R-95/128, PB96-963502 (May 1996).

"Soil Screening Guidance: User's Guide", EPA Publication No. EPA/540/R-96/018, PB96-963505 (April 1996).

Superfund Exposure Assessment Manual", EPA Publication No. EPA/540/1-88/001 (April 1988).

RCRA Facility Investigation Guidance, Interim Final, developed by USEPA (EPA 530/SW-89-031), 4 volumes, May 1989.

b) CFR (Code of Federal Regulations). Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, (202)783-3238.

c) This Section incorporates no later editions or amendments.

Section 742.215 Determination of Soil Attenuation Capacity

a) The concentrations of organic contaminants of concern remaining in the soil shall not exceed the attenuation capacity of the soil, as

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determined under subsection (b) of this Section.

The soil attenuation capacity is not exceeded if:

- 1) The sum of the organic contaminant residual concentrations analyzed for the purposes of the remediation program for which the analysis is performed, at each discrete sampling point, is less than the natural organic carbon fraction of the soil. If the information relative to the concentration of other organic contaminants is available, such information shall be included in the sum. The natural organic carbon fraction (foc) shall be either:
 - A) A default value of 6000 mg/kg for soils within the top meter and 2000 mg/kg for soils below one meter of the surface; or
 - B) A site-specific value as measured by ASTM D2974-87, Nelson and Sommers, or by SM-446 Method 9060, as incorporated by reference in Section 742.210;
- 2) The total petroleum hydrocarbon concentration is less than the natural petroleum hydrocarbon concentration of the soil as determined using a method approved by the Agency. The method selected shall be appropriate for the contaminants of concern to be addressed; or
- 3) Another method, approved by the Agency, shows that the soil attenuation capacity is not exceeded.

Section 742.220 Determination of Soil Saturation Limit

- a) For any organic contaminant that has a melting point below 30°C, the remediation objective for the inhalation exposure route developed under Tier 2 or Tier 3 shall not exceed the soil saturation limit, as determined under subsection (c) of this Section.
- b) For any organic contaminant, the remediation objective under Tier 2 or Tier 3 shall not exceed the groundwater migration limit, as determined under subsection (c) of this Section. The groundwater migration limit shall be the soil saturation limit, as determined under subsection (c) of this Section.
- c) The soil saturation limit shall be:
 - 1) The value listed in Appendix A, Table A for that specific contaminant;
 - 2) A value derived from Equation S29 in Appendix C, Table A; or
 - 3) A value derived from another method approved by the Agency.

Section 742.225 Determination of Compliance with Remediation Objectives

- a) Compliance with groundwater remediation objectives developed under Subparts D through F and H through I shall be determined by comparing the contaminant concentrations of discrete samples at each sample point to the applicable groundwater remediation objective. Sample points shall be determined by the program under which remediation is being conducted.
- b) Unless the person elects to composite samples or average sampling

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results as provided in subsections (c) and (d) of this Section, compliance with soil remediation objectives developed under Subparts D through G and I shall be determined by comparing the contaminant concentrations of discrete samples to the applicable soil remediation objective. Compliance is achieved if each sample result does not exceed that respective remediation objective.

- 1) Except as provided in subsections (c) and (d) of this Section, compositing of samples is not allowed.
- 2) Except as provided in subsection (c) and (d) of this Section, averaging of sample results is not allowed.
- 3) Notwithstanding subsections (c) and (d) of this Section, compositing of samples and averaging of sample results is not allowed for the construction worker population.
- 4) The number of sampling points required to demonstrate compliance is determined by the requirements applicable to the program under which remediation is performed.
- c) If a discrete sample result is less than the average soil sample results to determine compliance relative to the migration to groundwater portion of the groundwater ingestion exposure route, the following requirements apply:
 - 1) A minimum of two sampling locations for every 0.5 acre of contaminated area is required, with discrete samples at each sample location obtained at every two feet of depth, beginning at six inches below the ground surface and continuing through the zone of contamination. Alternatively, a sampling method may be approved by the Agency based on an appropriately designed site-specific evaluation. Samples obtained at or below the water table shall not be used in compositing or averaging.
- 2) For contaminants of concern other than volatile organic contaminants:
 - A) Discrete samples from the same boring may be composited.
 - B) Discrete sample results from the same boring may be averaged.
- 3) For volatile organic contaminants:
 - A) Compositing of samples is not allowed.
 - B) Discrete sample results from the same boring may be averaged.
- d) If a person chooses to composite soil samples or average soil sample results to determine compliance relative to the inhalation exposure route or the soil ingestion exposure route, the following requirements apply:
 - 1) Unless an alternative method is approved by the Agency, a minimum of 24 aliquots per 0.5 acre, to be collected within the area of contamination, is required. No more than 6 aliquots of equal volume shall be composited into one sample. Samples composited must be located proximate to each other such that discrete sample results can be obtained at each of the four corners of the area.
 - 2) Unless an alternative method is approved by the Agency based on

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an appropriately designed site-specific evaluation, for contaminants of concern other than volatile organic compounds:

- A) Each 0.5 acre portion of contaminated area of a site may be divided into quadrants of equal size and shape. The samples within the quadrant may be composited.
- B) Averaging of sample results taken from separate quadrants is allowed.
- 3) For volatile organic contaminants compositing of samples is not allowed. Discrete sample results from the same quadrant may be averaged.
- e) For purposes of calculating averages under this Section, if no more than 50 percent of sample results are reported as "non-detect", "no contamination", "below detection limits", or similar terms, such results shall be included in the averaging calculation as one-half of the reported analytical detection limit for the contaminant. If more than 50 percent of sample results are "non-detect", another procedure acceptable to the Agency may be used to determine an average.
- f) A person may propose an alternative method for determining compliance with remediation objectives.

Section 742.230 Agency Review and Approval

- a) Documents and requests filed with the Agency under this Part shall be submitted in accordance with the procedures applicable to the program under which remediation is performed.
- b) Agency review and approval of documents and requests under this Part shall be performed in accordance with the procedures applicable to the program under which the remediation is performed (e.g., 35 Ill. Adm. Code 732, Subpart E for Petroleum leaking underground storage tanks).

SUBPART C: EXPOSURE ROUTE EVALUATIONS

Section 742.300 General

This Subpart sets forth requirements to demonstrate that an actual or potential impact to a receptor or potential receptor from a contaminant of concern can be excluded from consideration from one or more exposure routes. As an alternative to the use of the requirements in this Part, a person may use the procedures for evaluation of exposure routes under Tier 3 as set forth in Section 742.225. If an evaluation under this Part demonstrates the applicable exposure route cannot be excluded from consideration, then the exposure route is excluded from consideration and no remediation objectives need be developed for that exposure route.

- a) No exposure route may be excluded from consideration until characterization of the extent and concentrations of contaminants of concern at a site has been performed. The actual steps and methods taken to characterize a site shall be determined by the requirements

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under which the site remediation is being addressed.

- b) The inhalation exposure route may be excluded from consideration if the requirements of Sections 742.305 and 742.310 are met.
- c) The soil ingestion exposure route may be excluded from consideration if the requirements of Sections 742.305 and 742.315 are met.
- d) The groundwater ingestion exposure route may be excluded from consideration if the requirements of Sections 742.305 and 742.320 are met.

Section 742.305 Contaminant Source and Free Product Determination

- No exposure route shall be excluded from consideration relative to a contaminant of concern unless the following requirements are met:
- a) The sum of the concentrations of all organic contaminants of concern shall not exceed the attenuation capacity of the soil as determined under Section 742.215;
 - b) the concentrations of any organic contaminants of concern remaining in the soil under Section 742.220; exceed the soil saturation limit as determined under Section 742.220;
 - c) Any soil which contains contaminants of concern shall not exhibit any of the characteristics of reactivity for hazardous waste as determined under 35 Ill. Adm. Code 721.123;
 - d) Any soil which contains contaminants of concern shall not exhibit a pH less than or equal to 2.0 or greater than or equal to 12.5, as determined by SW-846 Method 9040B for soils with 20 percent or greater aqueous (moisture) content or by SW-846 Method 9045C for soils with less than 20 percent aqueous (moisture) content as incorporated by reference in Section 742.210;
 - e) Any soil which contains contaminants of concern in the following list shall not exhibit any of the characteristics of toxicity for hazardous waste as determined by 35 Ill. Adm. Code 721.124, or an alternative method approved by the Agency: arsenic, barium, cadmium, chromium, lead, mercury, selenium, or silver.

Section 742.310 Inhalation Exposure Route

- a) The inhalation exposure route may be excluded from consideration if:
 - 1) The requirements of Section 742.305 are met; or
 - 2) An institutional control, in accordance with Subpart J, is in place to prevent exposure to the exposure route.
- b) Requires compliance with the requirements of subsection (b) of this Section; and
- B) Requires safety precautions for construction worker populations (e.g., use of appropriate personal protective equipment, if applicable).
- b) Requirements
 - 1) The concentration of any contaminant of concern within ten feet

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of the land surface or within ten feet of any man-made pathway shall not exceed the Tier I remediation objective under Subpart E for the inhalation exposure route; or

2) An engineered barrier, as set forth in Subpart K and approved by the Agency, is in place.

Section 742.315 Soil Ingestion Exposure Route

- a) The soil ingestion exposure route may be excluded from consideration if:
- 1) The requirements of Section 742.305 are met; or
 - 2) An institutional control, in accordance with Subpart J, is in place that meets the following requirements:
 - A) Requires compliance with the requirements of subsection (b) of this Section; and
 - B) Requires safety precautions for construction worker populations (e.g., use of appropriate personal protective equipment, if applicable).
- b) Requirements
- 1) The concentration of any contaminant of concern within three feet of the land surface shall not exceed the Tier I remediation objective under Subpart E for the ingestion of soil exposure route; or
 - 2) An engineered barrier, as set forth in Subpart K and approved by the Agency, is in place.

Section 742.320 Groundwater Ingestion Exposure Route

The groundwater ingestion exposure route may be excluded from consideration if:

- a) The requirements of Section 742.305 are met;
- b) The source of the release is not located within the minimum or maximum setback zone of a potable water supply well nor within a regulated recharge area of a potable water supply well;
- c) The concentration of any contaminant of concern within 2500 feet from the source of the release, as determined by the local government that effectively controls the discharge of groundwater as a potable supply of water, except at points of withdrawal by the unit of local government, is in place;
- d) As demonstrated using Equation R26, in Appendix C, Table C, in accordance with Section 742.810, the concentration of any contaminant of concern in groundwater within the minimum or maximum setback zone of an existing water supply well will meet the applicable Tier 1 groundwater remediation objective; and
- e) As demonstrated using Equation R26, in Appendix C, Table C, in accordance with Section 742.810, the concentration of any contaminant of concern in groundwater discharging into a surface water will meet the applicable surface water quality standard under 35 Ill. Adm. Code 302.

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SUBPART D: DETERMINING AREA BACKGROUND

Section 742.400 General

This Subpart provides procedures for determining area background concentrations for contaminants of concern. Except as described in Section 742.415(c) of this Subpart, area background concentrations may be used as remediation objectives for contaminants of concern at a site.

Section 742.405 Determination of Area Background for Soil

- a) Soil sampling results shall be obtained for purposes of determining area background levels in accordance with the following procedures:
 - 1) For volatile organic contaminants, sample results shall be based on discrete samples;
 - 2) Unless an alternative method is approved by the Agency, for contaminants other than volatile organic contaminants, sample results shall be based on discrete samples or composite samples. If a person elects to use composite samples, each 0.5 acre of the area to be sampled shall be divided into quadrants and 5 aliquots of equal volume per quadrant shall be composited into 1 sample;
 - 3) Samples shall be collected from similar depths and soil types, and shall be analyzed for the same contaminants. Soil type and contaminant maxima are found in the areas of known or suspected releases; and
 - 4) Samples shall be collected from areas of the site or adjacent to the site that are unaffected by releases at the site.
- b) Area background shall be determined according to one of the following procedures:
 - 1) Statewide Background Approach:
 - A) The maximum value of the range of concentrations of inorganic chemicals in background soils listed in Appendix A, Table F may be used as the upper limit of the area background concentration for the site. The first column to the right of the chemical name presents the range of concentrations of inorganic chemicals in background soils for counties outside Metropolitan Statistical Areas or counties within Metropolitan Statistical Areas identified in Appendix A, Table F, Footnote a. Sites located in counties outside Metropolitan Statistical Areas shall use the range of concentrations of inorganic chemicals in background soils shown in the second column to the right of the chemical name.
 - B) Soil area background concentrations determined according to this statewide background approach shall be used as provided in Section 742.415(b)(1). For each parameter whose sampling results demonstrate concentrations above those in Appendix A, Table F, the person shall develop appropriate soil

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- remediation objectives in accordance with this Part, or may determine area background in accordance with the procedures specified in this Part.
- 2) A statistically valid approach for determining area background concentrations appropriate for the characteristics of the data set, and approved by the Agency.

Section 742.410 Determination of Area Background for Groundwater

- a) Groundwater sampling results shall be obtained for purposes of determining area background in accordance with the following procedures:

- 1) Samples shall be collected from areas of the site or adjacent to the site that are unaffected by releases at the site;
 - 2) Ground monitoring wells, as determined in consultation with the Agency, shall be installed in areas of the site that are spatial and temporal variability, size, and number of known or suspected off-site releases of contaminants of concern, and the hydrogeological setting of the site;
 - 3) The samples shall be collected in consecutive quarters for a minimum of one year for each well or another sample schedule approved by the Agency;
 - 4) The samples shall be collected from the same stratigraphic unit(s) as the groundwater contamination at the site; and
 - 5) The background monitoring wells shall be located hydraulically upgradient from the release(s) of contaminants of concern, unless the Agency approves that the upgradient location is undesirable.
- b) Area background shall be determined according to one of the following procedures:

- 1) Prescriptive Approach
 - a) If more than 15 percent of the groundwater sampling results for a chemical obtained in accordance with Section 742.410(a) are less than the appropriate detection limit for that chemical, the Prescriptive Approach may not be used for that chemical. If 15 percent or less of the sampling results are less than the appropriate detection limit, a concentration equal to one-half the detection limit shall be used for that chemical in the calculations contained in this Prescriptive Approach.
 - b) The groundwater sampling results obtained in accordance with Section 742.410(a) shall be used to determine if the well set is normally distributed. The Shapiro-Wilk Test of Normality shall be used, if the sample set for the background well(s) contains 50 or fewer samples, to determine whether the sample set is normally distributed. Values necessary for the Shapiro-Wilk Test shall be determined using Appendix A, Tables E and F.

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If the computed value of W is greater than the 5 percent Critical Value in Appendix A, the sample set shall be normally distributed. If the computed value of W is less than 5 percent Critical Value in Appendix A, Table D, the sample set shall be assumed to not be normally distributed, and the Prescriptive Approach shall not be used.

- c) If the sample set contains at least ten sample results, the Upper Tolerance Limit (UTL) of a normally distributed sample set may be calculated using the mean (\bar{x}) and standard deviation (s), from:

$$UTL = \bar{x} + (K \text{ times } s),$$

where K = the one-sided normal tolerance factor for determining the 95 percent upper confidence limit of the 95th percentile of a normal distribution. Values for K shall be determined using Appendix A, Table B.

- d) If the sample set contains at least ten sample results, the UTL shall be the upper limit of the area background concentration for the site. If the sample set contains less than ten sample results, the maximum value of the sample set shall be the upper limit of the area background concentration for the site.

- e) This Prescriptive Approach shall not be used for determining area background for the parameter pH.
- 2) Another statistically valid approach for determining area background concentrations appropriate for the characteristics of the data set, and approved by the Agency.

Section 742.415 Use of Area Background Concentrations

- a) A person may request that area background concentrations determined pursuant to Sections 742.405 and 742.410 be used according to the provisions of Section 742.415(b). Such request shall address the following:

- 1) The natural or man-made pathways of any suspected off-site contamination reaching the site;
- 2) Physical and chemical properties of suspected off-site contaminants of concern reaching the site; and
- 3) The location and justification of area background sampling points. Each identified area background sampling point shall be used. Background concentrations may be used as follows:
 - 1) If determined under Section 742.405 or 742.410, to support a request to exclude a chemical as a contaminant of concern from further consideration for remediation at a site due to its presence as a result of background conditions; or
 - 2) If determined under Section 742.405 or 742.410, as remediation

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- objectives for contaminants of concern at a site in lieu of remediation objectives developed pursuant to the other procedures established in this Subpart J.
- c) Area background concentrations shall not be used in the event that the Agency has determined in writing that the background level for a regulated substance poses an acute threat to human health or the environment at the site when considering the post-remedial action and use. (Section 58.5(b)(3) of the Act)

SUBPART E: TIER 1 EVALUATION

Section 742.500 Introduction

- a) A Tier 1 evaluation compares the concentration of contaminants of concern detected at a site to the baseline remediation objectives provided in Appendix B, Tables A, B, C, D, and E. Use of Tier 1 remediation objectives requires only limited site-specific information. Concentrations of contaminants of concern, groundwater classification, and, if appropriate, soil pH (see Appendix A, Illustration A).
- b) Although Tier 1 allows for differentiation between residential and industrial/commercial property use of a site, institutional controls under Subpart J are required where remediation objectives are based on an industrial/commercial property use.
- c) Any given exposure route is not a concern if the concentrations of contaminants of concern detected at the site are all below the Tier 1 values of that given route. In such cases, no further evaluation of that route is necessary.

Section 742.505 Tier 1 Soil and Groundwater Remediation Objectives

- a) Soil
- 1) Inhalation Exposure Route
 - A) The Tier 1 soil remediation objectives for this exposure route based upon residential property use are listed in Appendix B, Table A.
 - B) The Tier 1 soil remediation objectives for this exposure route based upon industrial/commercial property use are listed in Appendix B, Table B. Soil remediation objective determinations relying on this table require use of institutional controls in accordance with Subpart J.
 - 2) Ingestion Exposure Route
 - A) The Tier 1 soil remediation objectives for this exposure route based upon residential property use are listed in Appendix B, Table A.
 - B) The Tier 1 soil remediation objectives for this exposure route based upon industrial/commercial property use are listed in Appendix B, Table B. Soil remediation objective

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- determinations relying on this table require use of institutional controls in accordance with Subpart J.
- 3) Migration to Groundwater Portion of the Groundwater Ingestion Route
 - A) The Tier 1 soil remediation objectives for this exposure route based upon residential property use are listed in Appendix B, Table A.
 - B) The Tier 1 soil remediation objectives for this exposure route based upon industrial/commercial property use are listed in Appendix B, Table B.
 - C) The pH-dependent Tier 1 soil remediation objectives for the identified ionizable organics or inorganics for the migration to groundwater portion of the groundwater ingestion exposure route (based on the total amount of contaminants present in the soil sample results and groundwater classification) are provided in Appendix B, Tables C and D.
 - 4) Evaluation of the dermal contact with soil exposure route is not required under Tier 1.
 - 5) Groundwater
 - 1) The Tier 1 groundwater remediation objectives for the direct ingestion of groundwater portion of the groundwater ingestion route are listed in Appendix B, Table E.
 - 2) The Tier 1 groundwater remediation objectives for this exposure route are given for Class I and Class II groundwaters, respectively.

Section 742.510 Tier 1 Tables

- a) Soil remediation objectives are listed in Appendix B, Tables A, B, C, and D.
- 1) Appendix B, Table A is based upon residential property use.
 - A) The first column to the right of the chemical name lists the remediation objectives for the soil ingestion exposure route.
 - B) The second column lists the soil remediation objectives for the inhalation exposure route.
 - C) The third and fourth columns list soil remediation objectives for the migration to groundwater portion of the groundwater ingestion exposure route for the respective classes of groundwater:
 - i) Class I groundwater.
 - ii) Class II groundwater.
 - D) The final column is the Acceptable Detection Limit (ADL), only where applicable.
 - 2) Appendix B, Table B is based upon industrial/commercial property use.
 - A) The first and third columns to the right of the chemical

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name list the soil remediation objectives for the soil ingestion exposure route based on two receptor populations:

- i) Industrial/Commercial population
- ii) Construction worker population.

B) The second and fourth columns to the right of the chemical name list the soil remediation objectives for the inhalation exposure route based on two receptor populations:

- i) Industrial/Commercial population
- ii) Construction worker population.

C) The first column to the right of the chemical name lists the soil remediation objectives for the migration to groundwater portion of the groundwater ingestion exposure route based on TCLP analyses for two classes of groundwater:

- i) Class I groundwater
- ii) Class II groundwater.

3) For those chemicals listed in Appendix B, Tables C and D, if a person elects to evaluate the migration to groundwater portion of the groundwater ingestion exposure route based on the total amount of contaminant in a soil sample result (rather than TCLP analysis), the person shall determine the soil pH at the site and use the appropriate soil remediation objectives based on Class I and Class II groundwater listed in Tables C and D, respectively. If the soil pH is less than 4.5 or greater than 8.0, then Tables C and D cannot be used.

4) Unless one or more exposure routes are excluded from consideration under Subpart C, the most stringent soil remediation objective of the exposure routes (i.e., soil ingestion exposure route, inhalation exposure route, and migration to groundwater portion of the groundwater ingestion exposure route) shall be compared to the concentrations of soil contaminants of concern measured at the site. When using Appendix B, Table B to select soil remediation objectives for the exposure routes, the most stringent soil remediation objective shall be the most stringent soil remediation objective of the industrial/commercial populations and construction worker populations.

5) Confirmation sample results may be averaged or soil samples may be composited in accordance with Section 742.225.

6) If a soil remediation objective for a chemical is less than the ADL, the ADL shall serve as the soil remediation objective.

b) Groundwater remediation objectives for the direct ingestion of groundwater portion of the groundwater ingestion exposure route are listed in Appendix B, Table B.

1) The first column to the right of the chemical name lists the groundwater remediation objectives for Class I groundwater and the second column lists the groundwater remediation objectives for Class II groundwater.

2) To use Table E, the Part 620 classification for groundwater at

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the site shall be determined. The concentrations of groundwater contaminants of concern at the site are compared to the applicable Tier 1 groundwater remediation objectives for the direct ingestion of groundwater portion of the groundwater ingestion exposure route in Appendix B, Table E. Appendix D describes the procedures to be used in determining whether groundwater is Class II.

c) For contaminants of concern not listed in Appendix B, Tables A, B, and C, the person elects to evaluate the migration to groundwater portion of the groundwater ingestion exposure route based on TCLP analyses for two classes of groundwater:

- i) Class I groundwater
- ii) Class II groundwater.

SUBPART F: TIER 2 GENERAL EVALUATION

Section 742.600 Introduction

a) Tier 2 remediation objectives are developed through the use of equations which allow site-specific data to be used (see Appendix C, Illustrations A and B). The equations identified in Appendix C, Tables A and C may be used to develop Tier 2 remediation objectives.

b) Remediation objectives for the direct ingestion of groundwater and corresponding exposure routes (except where excluded from further consideration under Subpart C) exceeding the Tier 1 remediation objectives. When conducting Tier 2 evaluations, the values used in the calculations must have the appropriate units of measure as identified in Appendix C, Tables B and D.

c) Any development of remediation objectives using site-specific information or equations outside the Tier 2 framework shall be evaluated under Tier 3.

d) In conducting a Tier 2 evaluation, the following conditions shall be met:

- 1) For each discrete sample, the total soil contaminant concentration of either a single contaminant or multiple contaminants of concern shall not exceed the attenuation capacity of the soil as provided in Section 742.215.

2) Remediation objectives for noncarcinogenic compounds which affect the same target organ shall meet the requirements of Section 742.610.

3) The soil remediation objectives based on the inhalation and migration to groundwater portion of the groundwater ingestion exposure routes shall not exceed the soil saturation limit as provided in Section 742.220.

e) If the calculated Tier 2 soil remediation objective for an applicable exposure route is more stringent than the Tier 1 remediation objective, the Tier 1 remediation objective shall be used.

f) If the calculated Tier 2 soil remediation objective for an exposure route is more stringent than the Tier 1 soil remediation objective(s) for the other exposure routes, then the Tier 2 calculated soil

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remediation objective applies and Tier 2 soil remediation objectives for the other exposure routes are not required.

- g) If the calculated Tier 2 soil remediation objective is less stringent than one or more of the soil remediation objectives for the remaining exposure routes, then the Tier 2 values are calculated for the remaining exposure route(s) and the most stringent Tier 2 calculated value applies.

Section 742.605 Land Use

- a) Present and post-remediation land use is evaluated in a Tier 2 evaluation. Acceptable exposure factors for the Tier 2 evaluation for residential, industrial/commercial, and construction worker populations are provided in the right column of both Appendix C, Tables B and D. If exposure factors differ, the most stringent in Appendix C, Tables B and D must be approved by the Agency as part of a Tier 3 evaluation.

- b) If a Tier 2 evaluation is based on an industrial/commercial property use, then:

- 1) Construction worker populations shall also be evaluated; and
- 2) Institutional controls are required in accordance with Subpart J.

Section 742.610 Chemicals with Cumulative Noncarcinogenic Effects

Appendix A, Table E lists the groups of chemicals from Appendix B, Tables A and B that have remediation objectives based on noncarcinogenic toxicity and that affect the same target organ. If more than one chemical detected at a site affects the same target organ, then the same critical effect as defined by the RFD is initially calculated for each chemical. The chemicals in the same group shall be corrected for cumulative effects by one of the two methods described in subsections (a) and (b).

- a) Calculate the weighted average using the following equations:

$$\frac{x[1]}{CWO[x[1]]} + \frac{x[2]}{CWO[x[2]]} + \frac{x[3]}{CWO[x[3]]} + \dots + \frac{x[a]}{CWO[x[a]]}$$

where:

$x[1]$ through $x[a]$ = Concentration of each individual contaminant at the location of concern. Note that, depending on the target organ/mode of action, the actual number of contaminants will range from 2 to 14.

$CWO[x[a]]$ = A Tier 2 remediation objective must be developed for each $x[a]$.

If the value of the weighted average calculated in accordance with the equations above is less than or equal to 1.0, then the

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remediation objectives are met for those chemicals.

If the value of the weighted average calculated in accordance with the equations above is greater than 1.0, then additional remediation must be carried out until the level of contaminants remaining in the remediated area have a weighted average calculated in accordance with the equation above less than or equal to one.

- b) Divide each individual chemical's remediation objective by the number of chemicals in that specific target organ group that were detected at the site. Each of the contaminant concentrations at the site is then compared to the remediation objectives that have been adjusted to account for the site conditions. The individual chemical's remediation objectives are listed in Appendix A, Table E. The respective remediation objective need be no lower than the respective value listed in Appendix B, Tables A or B.

Section 742.615 Chemical and Site Properties

- a) Physical and Chemical Properties of Contaminants
Tier 2 evaluations require information on the physical and chemical properties of the contaminants of concern. The physical and chemical properties used in a Tier 2 evaluation are contained in Appendix C, Table E. If the site has contaminants not included in this table, a person may request the Agency to provide the applicable physical and chemical input values or may propose input values under Subpart I. If a person proposes to apply values other than those in Appendix C, Tables B and D, the values must be provided by the Agency, the evaluation shall be considered under Tier 3.

- b) Soil and Groundwater Parameters

- 1) A Tier 2 evaluation requires examination of soil and groundwater parameters. The parameters that may be varied, and the conditions under which these parameters are determined as part of Tier 2, are summarized in Appendix C, Tables B and D. If a person proposes to vary site-specific parameters outside of the framework of these tables, the evaluation shall be considered under Tier 3.

- 2) To determine site-specific physical soil parameters, a minimum of one boring per 0.5 acre of contamination shall be collected. This boring must be deep enough to allow the collection of the required field measurements. The site-specific physical soil parameters must be determined from the position of the boring. Parameters that are site-specific include the following:
 - A) A sample of the predominant soil type for the vadose zone;

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and

- B) A sample of the predominant soil type for the saturated zone.
- C) A site-specific SSL dilution factor (used in developing soil remediation objectives based upon the protection of groundwater) to be determined by substituting site information in Equation S22 in Appendix C. The minimum of three monitoring wells shall be used in this demonstration, a minimum of three monitoring wells shall be used in this demonstration, a hydraulic gradient. As an alternative, the default dilution factor value listed in Appendix C, Table B is used. If monitoring wells are used to determine the hydraulic gradient, the soil taken from the borings shall be visually inspected to ensure there are no significant differences in the stratigraphy. If there are similar soil types in the field, one boring shall be used to determine the site-specific physical soil parameters. If there are significant differences, all of the borings shall be evaluated before determining the site-specific physical soil parameters.
- D) Not all of the parameters identified in Appendix C, Tables B and D need to be determined on a site-specific basis. A person may choose to collect partial site-specific information and use default values as listed in Appendix C, Tables B and D for the rest of the parameters.
- E) Appendix D describes the procedures to be used in determining whether groundwater is Class II.

SUBPART G: TIER 2 SOIL EVALUATION

Section 742.700 Overview

- a) Tier 2 remediation objectives are developed through the use of models which allow site-specific data to be considered. Appendix C, Tables A and C list equations that shall be used under a Tier 2 evaluation to calculate soil remediation objectives prescribed by SSL and RCBA models, respectively (see also Appendix C, Illustration A).
- b) Appendix C, Table A lists equations that are used under the SSL model (see also Appendix C, Illustration A). The SSL model has equations to evaluate the following human exposure routes:
 - 1) Soil ingestion exposure route;
 - 2) Inhalation exposure route for:
 - A) Particulate dust; and
 - B) Pesticide dust; and
 - 3) Migration to groundwater portion of the groundwater ingestion exposure route.
- c) Evaluation of the dermal exposure route is not required under the SSL model.
- d) Appendix C, Table C lists equations that are used under the RCBA model (see also Appendix C, Illustration A). The RCBA model has equations

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to evaluate human exposure based on the following:

- 1) The combined exposure routes of inhalation of vapors and particulates, oil ingestion, and dermal contact with soil;
- 2) The ambient vapor inhalation (outdoor) route from subsurface soils;
- 3) Migration to groundwater portion of the groundwater ingestion route; and
- 4) The combined exposure routes of ingestion exposure route.
- e) The equations in either Appendix C, Tables A or C may be used to calculate remediation objectives for each contaminant of concern under Tier 2, if the following requirements are met:
 - 1) The Tier 2 soil remediation objectives for the ingestion and inhalation exposure routes shall use the applicable equations from the same approach (i.e., SSL equations in Appendix C, Table C).
 - 2) The equations used to calculate soil remediation objectives for the migration to groundwater portion of the groundwater ingestion exposure route are not dependent on the approach utilized to calculate soil remediation objectives for the other exposure routes. The equations for calculating Tier 2 soil remediation objectives for the ingestion and inhalation exposure routes, and the RCBA equations for calculating Tier 2 soil remediation objectives for the migration to groundwater portion of the groundwater ingestion exposure route.
 - 3) Combining equations from Appendix C, Tables A and C to form a new model is not allowed. In addition, Appendix C, Tables A and C must use their own applicable parameters identified in Appendix C, Tables B and D, respectively.
 - f) In calculating soil remediation objectives for industrial/commercial property appropriate calculations shall be performed. The default value for the population default value and once using construction worker population default values. The more stringent soil remediation objectives derived from these calculations must be used for further Tier 2 evaluations.
 - g) Tier 2 data sheets provided by the Agency shall be used to present calculated Tier 2 remediation objectives, if required by the particular program for which remediation is being performed.
 - h) The RCBA equations which rely on the parameter Soil Water Sorption Coefficient (K_{sw}) can only be used for ionizing organics and inorganics by substituting values for K_{sw} from Appendix C, Tables 1 and 2, respectively. This will also require the determination of a site-specific value for soil pH.

Section 742.705 Parameters for Soil Remediation Objective Equations

- a) Appendix C, Tables B and D list the input parameters for the SSL and RCBA equations, respectively. The first column lists each symbol as

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it is presented in the equation. The next column defines the parameters. The third column shows the units for the parameters. The fourth column identifies where information on the parameters can be obtained (i.e., field measurement, applicable equation(s), reference source, or default value). The last column identifies how the parameters can be generated. A discussion of each parameter group follows.

- b) Default values are numerical values specified for use in the Tier 2 equations. The fourth column of Appendix C, Tables B and D denotes if the default values are from the SSL model, RCRA model, or some other source. The last column of Appendix C, Tables B and D lists the numerical values for the default values used in the SSL and RCRA equations, respectively.

- c) Site-specific information. The parameter measured, obtained, or determined from the site to calculate Tier 2 remediation objectives. The fourth column of Appendix C, Tables B and D identifies those site-specific parameters that may require direct field measurement. For some parameters, numerical default inputs have been provided in the last column of Appendix C, Tables B and D to substitute for site-specific information. In some cases, information on the receptor or soil type is required to select the applicable numerical default inputs. Site-specific information includes:

- 1) Physical soil parameters identified in Appendix C, Table F. The second column identifies the location where the sample is to be collected. Acceptable methods for measuring or calculating these soil parameters are identified in the last column of Appendix C, Table F.

- 2) Engineered barriers or institutional controls which can affect the cancer risk. Subparts J and K describe applicable institutional controls and engineered barriers under a Tier 2 evaluation.

- 3) Receptor classification (i.e., residential, industrial/commercial, and construction worker populations).

- d) Toxicological-specific information
- 1) Toxicological-specific information is used to calculate Tier 2 remediation objectives for the following parameters:

- A) Oral Chronic Reference Dose (RfD_o), expressed in mg/kg-d
- B) Oral Subchronic Reference Dose (RfD_s), expressed in mg/kg-d, shall be used for construction worker remediation objective calculations)

- C) Oral Slope Factor (SF_o), expressed in (mg/kg-d)⁻¹

- D) Inhalation unit risk factor (URF expressed in (ug/m³)(-1))

- E) Inhalation Chronic Reference Concentration (RfC, expressed in ug/m³)

- F) Inhalation Subchronic Reference Concentration (RfC_s), expressed in mg/m³), shall be used for construction worker

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- remediation objective calculations)
- C) Inhalation Chronic Reference Dose (RfD_i), expressed in mg/kg-d)

- H) Inhalation Subchronic Reference Dose (RfD_{is}), expressed in mg/kg-d, shall be used for construction worker remediation objective calculations)

- I) Inhalation Slope Factor (SF_i), expressed in (mg/kg-d)⁻¹)
- 2) Toxicological information can be obtained from IRIS, as incorporated by reference in Section 742.210, or the program under which the remediation is being performed.

- e) Chemical-specific information used to calculate Tier 2 remediation objectives is listed in Appendix C, Table E.

- f) Calculations numerical values for some parameters requires the use of equations listed in Appendix C, Tables A or C. The parameters that are calculated are listed in Appendix C, Tables B and D.

Section 742.710 SSL Soil Equations

- a) This Section sets forth the equations and parameters used to develop Tier 2 soil remediation objectives for the three exposure routes using the SSL approach.

- b) Soil Ingestion Exposure Route

- 1) Equations S1 through S3 form the basis for calculating Tier 2 remediation objectives for the soil ingestion exposure route using the SSL approach. Equation S1 is used to calculate soil remediation objectives for noncarcinogenic contaminants. Equations S2 and S3 are used to calculate soil remediation objectives for carcinogenic contaminants for residential populations and industrial/commercial and construction worker populations, respectively.

- 2) For Equation S1, the SSL default values cannot be modified with site-specific information.

- 3) For Equations S2 and S3, the only parameter that can be modified is the target cancer risk. A target cancer risk of more than 1 in 1,000,000 may be used if the applicable exposure routes have been managed through the use of institutional controls. The remaining parameters in Equations S2 and S3 are default values, and the corresponding numerical values in Appendix C, Table B must be used to calculate the Tier 2 SSL ingestion exposure route remediation objectives.

- c) Inhalation Exposure Route

 - 1) Equations S4 through S16, S26, and S27 are used to calculate Tier 2 remediation objectives for the inhalation exposure route using the SSL approach. To address this exposure route, violating materials must be evaluated separately from fugitive dust using their own equations set forth in subsections (c)(2) and (c)(3)

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of this Section, respectively.

2) Volatiles

A) Equations S4 through S10 are used to calculate Tier 2 soil remediation objectives for volatile contaminants based on the inhalation exposure route. Equation S4 is used to calculate soil remediation objectives for noncarcinogenic volatile contaminants in soil for residential and industrial/commercial populations. Equation S5 is used to calculate soil remediation objectives for carcinogenic volatile contaminants in soil for construction worker populations. Equation S6 is used to calculate soil remediation objectives for carcinogenic volatile contaminants in soil for residential and industrial/commercial populations. Equation S7 is used to calculate soil remediation objectives for carcinogenic volatile contaminants in soil for construction worker populations. Equations S8 through S10, S27, and S28 are used for calculating numerical values for some of the parameters in Equations S4 through S7.

B) The Volatilization Factor (VF) can be calculated in accordance with subsection (c)(2)(F) of this Section. The remaining parameters in Equation S4 have either SSL default values listed in Appendix C, Table B or toxicological-specific information (i.e., RFC), which can be obtained from IRIS or requested from the program under which the remediation is being performed.

C) For Equation S5, a numerical value for the Volatilization Factor adjusted for Agitation (VF*) can be calculated in accordance with subsection (c)(2)(G) of this Section. The remaining parameters in Equation S5 have either SSL default values listed in Appendix C, Table B or toxicological-specific information (i.e., RFC), which can be obtained from IRIS or requested from the program under which the remediation is being performed.

D) For Equation S6, a numerical value for VF can be calculated in accordance with subsection (c)(2)(F) of this Section. The remaining parameters in Equation S6 have either default values listed in Appendix C, Table B or toxicological-specific information (i.e., UNF), which can be obtained from IRIS or requested from the program under which the remediation is being performed.

E) For Equations S7 through S10, numerical values for the remaining parameters in Equations S7 through S10 can be calculated in accordance with subsection (c)(2)(G) of this Section. The remaining parameters in Equation S7 have either default values listed in Appendix C, Table B or toxicological-specific information (i.e., UNF), which can be obtained from IRIS or requested from the program under

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which the remediation is being performed.

F) The VF* can be calculated for residential and commercial/industrial populations using one of the following equations based on the information known about the contaminant source and receptor population:

- i) Equation S8, in conjunction with Equation S10, is used to calculate VF* assuming an infinite source of contamination.
- ii) If the area and depth of the contaminant source are known or can be estimated reliably, mass limit considerations may be used to calculate VF* using Equation S26.

G) The VF* can be calculated for the construction worker populations using one of the following equations based on the information known about the contaminant source:

- i) Equation S9 is used to calculate VF* assuming an infinite source of contamination.
- ii) If the area and depth of the contaminant source are known or can be estimated reliably, mass limit considerations may be used to calculate VF* using Equation S27.

3) Fugitive Dust

A) Equations S11 through S16 are used to calculate Tier 2 soil remediation objectives using the SSL fugitive dust model for the inhalation exposure route. Equation S11 is used to calculate soil remediation objectives for noncarcinogenic contaminants in fugitive dust for residential and industrial/commercial populations. Equation S12 is used to calculate soil remediation objectives for noncarcinogenic contaminants in fugitive dust for construction worker populations. Equation S13 is used to calculate soil remediation objectives for carcinogenic contaminants in fugitive dust for residential and industrial/commercial populations. Equation S14 is used to calculate soil remediation objectives for carcinogenic contaminants in fugitive dust for construction worker populations. Equations S15 and S16 are used for calculating numerical quantities for some of the parameters in Equations S11 through S14.

B) For Equation S11, a numerical value can be calculated for the Particulate Emission Factor (PEF) using Equation S15. This equation relies on various input parameters from a variety of sources. The remaining parameters in Equation S11 can be calculated in accordance with subsection (c)(2)(G) of this Section. The remaining parameters in Equation S11 have either default values listed in Appendix C, Table B or toxicological-specific information (i.e., RFC), which can be obtained from IRIS or requested from the program under which the remediation is being performed.

C) For Equation S12, a numerical value for the Particulate

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Emission Factor for Construction Worker (PEF') can be calculated using Equation S16. The remaining parameters in Equation S12 have either SSL default values listed in Appendix C, Table B or toxicological-specific information (i.e., RfC), which can be obtained from IRIS or requested from the program under which the remediation is being performed.

D) For Equation S13, a numerical value for PEF can be calculated using Equation S15. The remaining parameters in Equation S13 have either default values listed in Appendix C, Table B or toxicological-specific information (i.e., URf), which can be obtained from IRIS or requested from the program under which the remediation is being performed.

E) For Equation S14, a numerical value for PEF' can be calculated using Equation S16. The remaining parameters in Equation S14 have either default values listed in Appendix C, Table B or toxicological-specific information (i.e., URf), which can be obtained from IRIS or requested from the program under which the remediation is being performed.

d) Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route

The Tier 2 remediation objective for the migration to groundwater portion of the groundwater ingestion exposure route can be calculated using one of the following equations based on the information known about the contaminant source and receptor population:

1) Equation S17 is used to calculate the remediation objective assuming an infinite source of contamination.

A) The numerical quantities for four parameters in Equation S17, the Target Soil Leachate Concentration (C(w)), Soil-Water Partition Coefficient (K(d)), Water-Filled Soil Porosity (Omega(w)), and Air-Filled Soil Porosity (Omega(a)) are calculated using Equations S18, S19, S20, and S21, respectively. Equations S22, S23, S24, and S25 are also used to calculate numerical values for Equations S18 and S22.

B) The remaining parameters in Equation S17 are Henry's Law Constant (H'), a chemical specific value listed in Appendix C, Table E and Dry Soil Bulk Density (D(b)), a site-specific based value listed in Appendix C, Table B.

C) The default value for GW(obj) is the Tier 1 groundwater objective. For chemicals for which there is no Tier 1 groundwater remediation objective, the value for GW(obj) shall be the Health Advisory concentration determined according to the procedures specified in 35 Ill. Adm. Code 620, Subpart F. As an alternative to using the Tier 1 groundwater remediation objectives or Health Advisories, a target risk for carcinogens greater than 1 in 1,000,000 may be used to calculate GW(obj) using Equation S23, and a

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Target Hazard Quotient greater than 1.0 may be used to calculate GW(obj) using the procedures of Subpart I, if approved institutional controls are in place as may be required in Subpart J.

2) If the area and depth of the contaminant source are known or can be estimated reliably, mass limit considerations may be used to calculate the remediation objective for this exposure route using Equation S28. The parameters in Equation S28 have default values listed in Appendix C, Table B.

Section 742.715 RCRA Soil Equations

a) This Section presents the RCRA model and describes the equations and parameters used to develop Tier 2 soil remediation objectives.

b) Ingestion, Inhalation, and Dermal Contact

- 1) The two sets of equations in subsections (b)(2) and (b)(3) of this Section

shall be used to generate Tier 2 soil remediation objectives for the combined ingestion, inhalation, and dermal contact with soil exposure route.

2) Combined Exposure Routes of Soil Ingestion, Inhalation of Vapors and Particulates, and Dermal Contact with Soil

A) Equations R1 and R2 form the basis for deriving Tier 2 remediation objectives for the set of equations that evaluates the combined exposure routes of soil ingestion, inhalation of vapors and particulates, and dermal contact with soil using the RCRA approach. Equation R1 is used to calculate soil remediation objectives for carcinogenic contaminants. Equation R2 is used to calculate soil remediation objectives for noncarcinogenic contaminants. Soil remediation objectives for the ambient vapor inhalation (outdoor) route from subsurface soils must also be calculated in accordance with the procedures outlined in Subpart J) of this Chapter and the default values generated from Equations R1 or R2. The smaller value (i.e., R1 and R2 compared to R7 and R8, respectively) from these calculations is the Tier 2 soil remediation objective for the combined exposure routes of soil ingestion, inhalation, and dermal contact with soil.

B) In Equation R1, numerical values are calculated for two parameters:

- i) The volatilization factor for surficial soils (VF(ss)) using Equations R3 and R4; and
- ii) The volatilization factor for subsurface soils regarding particulates (VF(p)) using Equation R5.

C) VF(ss) uses Equations R3 and R4 to derive a numerical value. Equation R3 requires the use of Equation R6. Both equations must be used to calculate the VF(ss). The lowest calculated

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- value from these equations must be substituted into Equation R1.
- D) The remaining parameters in Equation R1 have either default values listed in Appendix C, Table D or toxicological-specific information (i.e., $SR(ol)$, $SR(ill)$, $VR(ol)$, $VR(ill)$) from the program under which the remediation is being performed.
- E) For Equation R2, the parameters $VF(ol)$ and $VF(ill)$ are calculated. The remaining parameters in Equation R2 have either default values listed in Appendix C, Table D or toxicological-specific information (i.e., $RF(D)$, $RF(ill)$), which can be obtained from IRIS or requested from the program under which the remediation is being performed.
- F) For chemicals other than inorganics which do not have default values for the dermal absorption factor ($RAF(d)$) in Appendix C, Table D, a dermal absorption factor of 0.5 shall be used for Equations R1 and R2. For inorganics, dermal absorption may be disregarded (i.e., $RAF(d)=0$).
- 3) Ambient vapor from (outdoor) route from Subsurface Soils (soil below one meter)
- A) Equations R7 and R8 form the basis for deriving Tier 2 remediation objectives for the ambient vapor inhalation (outdoor) route from subsurface soils using the RBCA approach. Equation R7 is used to calculate soil remediation objectives for carcinogenic contaminants. Equation R8 is used to calculate soil remediation objectives for noncarcinogenic contaminants.
- B) For Equation R7, the carcinogenic risk-based screening level for air ($RBSL(air)$) and the volatilization factor for soils below one meter to ambient air ($VF(samb)$) have numerical values that are calculated using Equations R9 and R11, respectively. Both equations rely on input parameters from a variety of sources.
- C) The noncarcinogenic risk-based screening level for air ($RBSL(air)$) and the volatilization factor for soils below one meter to ambient air ($VF(samb)$) in Equation R8 have numerical values that can be calculated using Equations R10 and R11, respectively.
- c) Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route
- 1) Equation R12 forms the basis for deriving Tier 2 remediation objectives for the migration to groundwater portion of the groundwater ingestion exposure route using the RBCA approach. The parameters $VR(ol)$ and $VR(ill)$ at the source ($VR(source)$) and $VR(ol)$ and $VR(ill)$ at the receptor ($VR(receptor)$) have numerical values that are calculated using Equations R13 and R14, respectively.
- 2) Equation R13 requires numerical values that are calculated using Equation R15.

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- 3) Equation R14 requires numerical values that are calculated using Equations R21, R22, and R24. For non-ionizing organics, the Soil Water Absorption Coefficient ($K(s)$) shall be calculated using Equation R20. For ionizing organics and inorganics, the values for $K(s)$ are listed in Appendix C, Tables I and J, respectively. The remaining parameters in Equation R14 are field measurements or default values listed in Appendix C, Table D.
- d) The default value for $GW(comp)$ is the Tier 1 groundwater objective. For chemicals for which there is no Tier 1 groundwater remediation objective, the value for $GW(comp)$ shall be the Health Advisory concentration determined according to the procedures specified in 35 Ill. Adm. Code 620, Subpart F. As an alternative to using the Tier 1 groundwater remediation objectives or Health Advisories, a target risk for carcinogens greater than 1 in 1,000,000 may be used to calculate $GW(comp)$ using Equation R25. A target Hazard Quotient of 1 may be used to calculate $GW(comp)$ for noncarcinogens. The remedial controls are in place as may be required in Subpart J, if approved institutional controls are in place as may be required in Subpart J.

SUBPART H: TIER 2 GROUNDWATER EVALUATION

Section 742.800 General

If the contaminant concentrations in the groundwater exceed the applicable Tier 1 remediation objectives, a person has the following options:

- Demonstrate that the groundwater ingestion exposure route is excluded from consideration pursuant to Subpart C;
- Demonstrate that the groundwater concentration is at or below area level and consistent with the remediation objectives in Subpart D and, if necessary, an institutional control restricting usage of the groundwater is in place in accordance with Subpart J;
- Remediate to Tier 1 remediation objectives;
- Develop Tier 2 groundwater remediation objectives in accordance with Section 742.805 and remediate to that level, if necessary;
- Conduct a Tier 3 evaluation in accordance with Subpart I; or
- Obtain approval from the Board to:
 - Reclassify the groundwater pursuant to 35 Ill. Adm. Code 620.260; or
 - Use an adjusted standard pursuant to Section 28.1 of the Act.

Section 742.805 Tier 2 Groundwater Remediation Objectives

- To develop a groundwater remediation objective under this Section that exceeds the applicable Tier 1 groundwater remediation objective, a person may request approval from the Agency if the person has

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performed the following:

- 1) Identified the horizontal and vertical extent of groundwater for which the Tier 2 groundwater remediation objective is sought;
 - 2) Reasonably estimated the maximum extent practicable to reason correct the product;
 - 3) Using Equation R26 in accordance with Section 742.810, demonstrated that the concentration of any contaminant of concern in groundwater will meet:
 - A) The applicable Tier 1 groundwater remediation objective at the point of human exposure; or
 - B) For any contaminant of concern for which there is no Tier 1 groundwater remediation objective, the Health Advisory concentration determined according to the procedures specified in 35 Ill. Adm. Code 620, Subpart F at the point of human exposure. A person may request the Agency to provide these concentrations or may propose these concentrations under Subpart J;
 - 4) Using Equation R26 in accordance with Section 742.810, demonstrated that the concentration of any contaminant of concern in groundwater within the minimum or maximum setback zone of an existing potable water supply well will meet the applicable Tier 1 groundwater remediation objective;
 - 5) Using Equation R26 in accordance with Section 742.810, demonstrated that the concentration of any contaminant of concern in groundwater discharging into a surface water will meet the applicable surface water quality standard under 35 Ill. Adm. Code 302;
 - 6) Demonstrated that the source of the release is not located within the minimum or maximum setback zone of a potable water supply well; and
 - 7) If the selected corrective action includes an engineered barrier to minimize migration of contaminants from the soil to the groundwater, the barrier must be installed in a place for post-remediation land use through an institutional control as set forth in Subpart J.
- b) A groundwater remediation objective that exceeds the water solubility of that chemical (refer to Appendix C, Table E for solubility values) is not allowed.

Section 742.810 Calculations to Predict Impacts from Remaining Groundwater Contamination

- a) Equation R26 predicts the contaminant concentration along the centerline of a plume emanating from a vertical planar source in the aquifer (dimensions S(w) wide and S(d) deep). This model accounts for both three-dimensional dispersion (x is the direction of groundwater flow, y is the other horizontal direction, and z is the vertical

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direction) and biodegradation.

- 1) The parameters in this equation are:

X =

distance from the planar source to the location of concern, along the centerline of the plume (i.e., y=0, z=0)

C(x) =

the concentration of the contaminant at a distance X from the source, along the centerline of the plume

C([source]) =

the greatest potential concentration of the contaminant of concern in the groundwater at the source of the contamination, based on the concentrations of contaminants in groundwater due to the release and the projected concentration of the contaminant of concern in the groundwater. As indicated above, the model assumes a planar source discharging groundwater at a concentration equal to C([source]).

Alpha(x) =

dispersivity in the x direction (i.e., Equation R16)

Alpha(y) =

dispersivity in the y direction (i.e., Equation R17)

Alpha(z) =

dispersivity in the z direction (i.e., Equation R18)

U =

specific discharge (i.e., actual groundwater flow velocity through a porous medium; takes into account the fact that the groundwater actually flows only through the pores of the subsurface materials), where the aquifer hydraulic conductivity (K), the infiltration rate (I), and the total soil porosity (Omega(T)) must be known (i.e., Equation R19)

Lambda =

first order degradation constant obtained from Appendix C, Table E or from measured groundwater data

S(w) =

width of planar source in the y direction

S(d) =

depth of planar source in the z

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Any proposals for the use of models other than those specified in Tier 2 shall be submitted to the Agency for review and approval. A submittal under this Section shall include the following information:

- Physical and chemical properties of contaminants of concern;
- Contaminant movement properties;
- Contaminant availability to receptors;
- Receptor exposure to the contaminants of concern;
- Mathematical and technical justification for the model proposed;
- A licensed copy of the model, if the Agency does not have a licensed copy of the model currently available for use; and
- Demonstration that the models were correctly applied.

Section 742.915 Formal Risk Assessments

A comprehensive, site-specific risk assessment shall demonstrate that contaminants of concern at a site do not pose a significant risk to any human receptor. All site-specific risk assessments shall be submitted to the Agency for review and approval. A submittal under this Section shall address the following factors:

- Whether the risk assessment procedure used is nationally recognized and accepted including, but not limited to, those procedures incorporated by reference in Section 742.210;
- Whether the site-specific data reflect actual site conditions;
- The adequacy of the investigation of present and post-remediation exposure routes and risks to receptors identified at the site;
- The appropriateness of the sampling and analysis;
- The adequacy of the completeness of toxicity information;
- The adequacy of the completeness of exposure information;
- Whether the calculations were accurately performed.

Section 742.920 Impractical Remediation

Any request for site-specific remediation objectives due to impracticality of remediation shall be submitted to the Agency for review and approval. A submittal under this Section shall include the following information:

- The reason(s) why the remediation is impractical;
- The extent of contamination;
- Geology, including soil types;
- The potential impact to groundwater;
- Results and locations of sampling events;
- Map of the area, including all utilities and structures; and
- Present and post-remediation uses of the area of contamination, including human receptors at risk.

Section 742.925 Exposure Routes

Technical information may demonstrate that there is no actual or potential impact of contaminants of concern to receptors from a particular exposure

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route. In these instances, a demonstration excluding an exposure route shall be submitted to the Agency for review and approval. A submittal under this Section shall include the following information:

- A description of the route evaluated;
- Technical support including a discussion of the natural or man-made barriers to exposure through that route, calculations, and modelling results;
- Physical and chemical properties of contaminants of concern;
- Contaminant migration properties;
- Description of the site and physical site characteristics; and
- Discussion of the result and possibility of the route becoming active in the future.

Section 742.930 Derivation of Toxicological Data

If toxicological-specific information is not available for one or more contaminants of concern from the sources incorporated by reference in Section 742.210, the derivations of toxicological-specific information shall be submitted for Agency review and approval.

Section 742.935 Agricultural Uses and Ecological Receptors (Reserved)

SUBPART J: INSTITUTIONAL CONTROLS

Section 742.1000 General

- Any person who develops remediation objectives under this Part based on an industrial/commercial property use or based on engineered barriers under Subpart K shall meet the requirements of this Subpart relative to institutional controls. Institutional controls in accordance with this Subpart must be in place on the property when remediation objectives are based on any of the following assumptions:
 - Industrial/Commercial property use;
 - Target cancer risk greater than 1 in 1,000,000;
 - Target hazard quotient greater than 1;
 - Engineered barrier(s); or
 - Any combination of the above.
- The Agency shall not approve any remediation objective under this Part that is based on the use of institutional controls unless the person has proposed institutional controls meeting the requirements of this Subpart. A proposal for approval of institutional controls shall include identification of the types of selected institutional controls from among the types recognized in this Subpart.
- The following types of institutional controls are recognized under this Subpart:
 - No Further Remediation Letters;
 - Restrictive covenants and deed restrictions;
 - Negative easements;

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- 4) Ordinances adopted and administered by a unit of local government.
- 5) Agreements between a property owner and a highway authority with respect to any contamination remaining under highways.

BOARD NOTE: Definitions in the Illinois Highway Code for "highway authority", "highway", and "right-of-way" are applicable to this Part.

Section 742.1005 No Further Remediation Letters

- a) A No Further Remediation Letter issued by the Agency may be used as an institutional control under this Part if the requirements of this Section are met and the Agency has determined that "no further remediation is necessary." Is required as to the property(ies) to which the letter is applied.
- b) A request for approval of a No Further Remediation Letter as an institutional control shall follow the requirements applicable to the remediation program under which the remediation is performed.
- c) The recipient of the letter shall submit the letter to the Office of the Recorder or the Registrar of Titles of the county in which the site is located within 45 days after receipt of the letter in such a manner that it forms a permanent part of the chain of title for the site. Proper recording of the No Further Remediation Letter shall consist of adding the letter and an Environmental Notice form to other public documents that would normally be examined during a title search.
- d) A No Further Remediation Letter shall not become effective until officially recorded in accordance with subsection (c) of this Section. The recipient of the letter shall obtain and submit to the Agency a copy of the letter demonstrating that it has been recorded.
- e) At no time shall any site for which land use has been restricted under a No Further Remediation Letter be used in a manner inconsistent with such land use limitation unless further investigation or remedial action has been conducted that documents the attainment of objectives appropriate for the new land use and a new letter is obtained and recorded in accordance with subsection (c) of this Section.
- f) The recipient of a No Further Remediation Letter shall be responsible for obtaining and recording the letter on the grounds for voidance of the letter and for the Agency's "No Further Remediation" determination in accordance with the procedures applicable to the remediation program under which the remediation is performed.

Section 742.1010 Restrictive Covenants, Deed Restrictions, and Negative Easements

- a) A restrictive covenant, deed restriction, or negative easement may be used as an institutional control under this Part if the requirements of this Section are met and the Agency has determined that "no further remediation" is required as to the property(ies) to which the

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- a) Institutional control is to apply:
 - 1) A restrictive covenant, deed restriction, or negative easement as an acceptable institutional control shall provide the following:

- 1) A copy of the restrictive covenant, deed restriction, or negative easement in the form it will be recorded with the Office of the Recorder or Registrar of Titles in the county where the site is located. The restrictive covenant, deed restriction, or negative easement shall reference or incorporate the terms of the "No Further Remediation" determination so as to require any current owners and all successors in interest to meet the requirements of the No Further Remediation determination as a condition of ownership of the property.
- 2) A scaled map showing the total extent of contamination above the applicable remediation objectives;
- 3) Information showing the concentration of contaminants of concern in which the applicable remediation objectives are exceeded;
- 4) A scaled map showing the legal boundaries of all properties subject to the restrictive covenant, deed restriction, or negative easement under which contamination is located that exceeds the applicable remediation objectives;
- 5) Information identifying the current owner(s) of each property identified in subsection (b)(4) of this Section; and
- 6) Authorization by the current owner(s), or person authorized by the current owner(s), to submit to the Agency a copy of the letter identified in subsection (b)(5) of this Section to record the restrictive covenant or deed restriction.
- c) Any restrictive covenant, deed restriction, or negative easement approved by the Agency pursuant to this Part shall be recorded with the "No Further Remediation" determination in the Office of the Recorder or the Registrar of Titles of the county in which the site is located within 45 days after receipt of the Agency approval in accordance with Section 742.1005(c).
- d) An institutional control approved under this Section shall not become effective until officially recorded in accordance with subsection (c) of this Section. The recipient of the letter shall obtain and submit to the Agency a copy of the letter demonstrating that it has been recorded.
- e) At no time shall any site for which land use has been restricted under an institutional control approved under this Section be used in a manner inconsistent with such land use limitation unless further investigation or remedial action has been conducted that documents the attainment of objectives appropriate for such land use and a new institutional control is approved and recorded in accordance with subsection (c) of this Section.
- f) Violation of the terms of an institutional control approved under this Section shall ground for voidance of the letter and for the Agency's "No Further Remediation" determination pursuant to the Agency's "No Further Remediation" determination pursuant to

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Section 58.10 of the Act.

Section 742.1015 Ordinances

- a) An ordinance adopted by a unit of local government that effectively prohibits the use of groundwater as a potable supply of water, except at points of withdrawal by the unit of local government, may be used as an institutional control to meet Section 742.805 if the requirements of this Section are met.
- b) A request for approval of a local ordinance as an institutional control shall provide the following:
 - 1) A map showing the location of the groundwater use restricting groundwater use in which the site is located, certified by the unit of local government, in which the site is located, entered on the map of the unit of local government, and entered on the agreement under subsection (1) of this Section, in which case the request may alternatively reference the Memorandum of Understanding (MOU). The ordinance must demonstrate that potable use of groundwater from water supply wells is prohibited;
 - 2) A scaled map(s) delineating the areal extent of groundwater contamination (measured or modeled) above the applicable remediation objectives;
 - 3) Information showing the concentration of contaminants of concern in which the applicable remediation objectives are exceeded;
 - 4) A scaled map delineating the boundaries of all properties under which groundwater is located which exceeds the applicable remediation objectives;
 - 5) Information identifying the owner(s) of each property identified in subsection (b)(4) of this Section; and
 - 6) A copy of the proposed submission of the information to the current owners identified in subsection (b)(5) of this Section of the information required in subsections (b)(1) through (b)(5) of this Section and proof that the notification required in subsection (c) of this Section has been submitted.
- c) Each of the property owners identified in subsection (b)(5) of this Section and the unit of local government must receive written notification from the party desiring to use the institutional control that groundwater remediation objectives have been approved by the Agency. Written proof of this notification shall be submitted to the Agency within 45 days from the date of the Agency No Further Remediation Letter or determination. The notification shall include:
 - 1) The name and address of the unit of local government;
 - 2) The citation of the ordinance;
 - 3) A description of the property being sent notice by adequate legal description or by reference to a plat showing the boundaries;
 - 4) A statement that the ordinance restricting groundwater use has been used by the Agency in reviewing a request for a groundwater remediation objective;
 - 5) A statement as to the nature of the release and response action

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with the site name, address, and Agency site number or Illinois inventory identification number; and

- 6) A statement as to where more information may be obtained regarding the ordinance.

- d) Unless the Agency and the unit of local government have entered an agreement under subsection (1) of this Section, the current owner or successors in interest of a site who have received approval of use of an ordinance as an institutional control under this Section shall:
 - 1) Monitor activities of the unit of local government relative to variance requests or changes in the ordinance relative to the use of groundwater on the site; and
 - 2) Notify the Agency of any approved variance requests or ordinance changes within 30 days after the date such action has been approved.

e) The information required in subsections (b)(1) through (b)(6) of this Section and the Agency letter approving the groundwater remediation objective shall be submitted to the unit of local government. Proof that the information has been filed with the unit of local government shall be provided to the Agency.

f) Unless the Agency and the unit of local government have entered an agreement under subsection (1) of this Section, a site owner who has received approval of use of an ordinance as an institutional control under this Section shall record as an institutional control under subsection 742.1005 of Section 742.10 of the Illinois Natural Resources Code, the information required in subsection (b)(4) of this Section to monitor activities of the unit of local government.

g) An institutional control approved under this Section shall not become effective until the site owner's duties under subsection (d) of this Section are officially recorded in accordance with subsection (f) of this Section. The person receiving the approval shall obtain and submit to the Agency a copy of the institutional control demonstrating that it has been recorded.

h) The following shall be grounds for voidance of the ordinance as an institutional control and the Agency's "No Further Remediation" determination:

- 1) Modification of the ordinance by the unit of local government to allow potable use of groundwater;
- 2) Approval of a site-specific request, such as a variance, to allow use of the site as a residential or commercial site; and
- 3) Violation of the terms of an institutional control recorded under Section 742.1005 or Section 742.1010.

i) The Agency and a unit of local government may enter a Memorandum of Understanding (MOU) under this Section if the unit of local government has adopted an ordinance that effectively prohibits the use of groundwater as a potable supply of water, except at points of withdrawal by the unit of local government, and if the requirements of

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this subsection are met. The MOU shall include the following:

- 1) Identification of the authority of the unit of local government to enter the MOU;
- 2) Identification of the legal boundaries, or equivalent, under which the ordinance is applicable;
- 3) A certified copy of the ordinance;
- 4) A commitment by the unit of local government to notify the Agency of any variance requests or proposed ordinance changes at least 30 days prior to the date the local government is scheduled to take action on the request or proposed change; and
- 5) Commitment by the unit of local government to maintain a copy of all information submitted to the unit of local government that has received "No Further Remediation" determinations under this Part.

Section 742.1020 Highway Authority Agreements

- a) An agreement with a highway authority may be used as an institutional control where the requirements of this Section are met and the Agency has determined that "no further remediation" is required as to the property(ies) to which the agreement is to apply.

- b) As part of the agreement the highway authority shall agree to:
 - 1) That is contaminated groundwater under the highway right of way that is contaminated above Tier 1 remediation objectives from the release as a potable supply of water;
 - 2) Limit access to soil contamination under the highway right of way that is contaminated above Tier 1 remediation objectives from the release. Access to soil contamination may be allowed if, during and after any access, public health and the environment are protected.

- c) A request for approval of an agreement as an institutional control shall provide the following:

- 1) A copy of the agreement executed by the highway authority and the Agency;
- 2) A scaled map of the property from which the release occurred;
- 3) Information showing the concentration of contaminants of concern within the zone in which the applicable Tier 1 remediation objectives are exceeded;
- 4) A stipulation of the information required by subsection (b) of this Section in the agreement if it is not practical to obtain the information by sampling the highway right-of-way; and
- 5) Information identifying the current fee owner of the highway right-of-way and highway authority having jurisdiction.

- d) Violation of the terms of an Agreement approved by the Agency as an institutional control shall be grounds for voidance of the Agreement as an institutional control and the Agency's "No Further Remediation" determination.

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SUBPART K: ENGINEERED BARRIERS

Section 742.1100 General

- a) Any person who develops remediation objectives under this Part based on engineered barriers shall meet the requirements of this Subpart and the requirements of Subpart J relative to institutional controls.
- b) The Agency shall not approve any remediation objective under this Part that is based on the use of engineered barriers unless the person has proposed engineered barriers meeting the requirements of this Subpart.
- c) The use of engineered barriers can be recognized in calculating remediation objectives only if the engineered barriers are intended to prevent or reduce the release of contaminants from the site.
- d) Any "No Further Remediation" determination based upon the use of engineered barriers shall require effective maintenance of the engineered barrier. The maintenance requirements shall be included in an institutional control under Subpart J and are to be maintained by the owner of the site. This responsibility shall be transferable with the property. This institutional control shall address provisions for temporary breaches of the barrier by requiring the following if intrusive construction work is to be performed in which the engineered barrier is to be temporarily breached:
 - 1) The construction workers shall be notified by the site owner/operator in advance of intrusive activities. Such notification shall specifically enumerate the contaminant of concern known to be present; and
 - 2) The site owner/operator shall require construction workers to implement protective measures consistent with good industrial hygiene practice.
- e) Failure to maintain an engineered barrier in accordance with the "No Further Remediation" determination shall be grounds for voidance of the determination.

Section 742.1105 Engineered Barrier Requirements

- a) Natural attenuation, access controls, and point of use treatment shall not be considered engineered barriers. Engineered barriers may not be used to prevent direct human exposure to groundwater.
- b) For purposes of determining remediation objectives under Tier 1, engineered barriers are not recognized.
- c) The following engineered barriers are recognized for purposes of calculating remediation objectives that exceed residential remediation objectives:
 - 1) For the migration to groundwater portion of the groundwater ingestion exposure route, the following engineered barriers are recognized:
 - A) Caps, covering the contaminated media, constructed of

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- compacted clay, asphalt, concrete or other material approved by the Agency; and
- B) Permanent structures such as buildings and highways.
- 2) For the soil ingestion exposure route, the following engineered barriers are recognized:
- A) Caps, covering the contaminated media, constructed of compacted clay, asphalt, concrete, or other material approved by the Agency;
- B) Permanent structures such as buildings and highways; and
- C) Clean soil, covering the contaminated media, that is a minimum of one meter in depth.
- 3) For the groundwater exposure route, the following engineered barriers are recognized:
- A) Caps, covering the contaminated media, constructed of compacted clay, asphalt, concrete, or other material approved by the Agency; and
- B) Permanent structures such as buildings and highways.
- 4) For the ingestion of groundwater exposure route, the following engineered barriers are recognized:
- A) Slurry walls; and
- B) Hydraulic control of groundwater.
- d) Unless otherwise prohibited under Section 742.11100, any other type of engineered barrier may be proposed if it will be as effective as the options listed in subsection (c) of this Section.

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Section 742.APPENDIX A General

TABLE A Soil Saturation Limits (Csat) for Chemicals Whose Melting Point is Less than 30° C

Chemical Name	Csat (mg/kg)
Acetone	100,000
Benzene	870
Bis(2-chloroethyl)ether	3,300
Bis(2-ethylhexyl)phthalate	31,000
Bromodichloromethane (Dichlorobromomethane)	3,300
Bromodifluoromethane	1,900
Bromochloromethane	10,000
Butyl benzyl phthalate	930
Carbon disulfide	720
Carbon tetrachloride	1,100
Chlorobenzene (Monochlorobenzene)	680
Chlorodibromomethane (Dibromochloromethane)	1,300
Chloroform	2,900
1,2-Dibromo-3-chloropropane	1,400
1,2-Dibromomethane (Ethylene dibromide)	2,800
Di-n-butyl phthalate	2,300
1,2-Dichlorobenzene (o-Dichlorobenzene)	560
1,1-Dichloroethane	1,700
1,2-Dichloroethane (Ethylene dichloride)	1,500
1,1,2-Trichloroethane	1,200
cis-1,2-Dichloroethane	3,100
trans-1,2-Dichloroethane	1,100
1,2-Dichloropropane	1,400
1,3-Dichloropropane (1,3-Dichloropropylene, cis + trans)	2,000
Diethyl phthalate	10,000
Di-n-octyl phthalate	400
Ethylbenzene	2,200
Hexachlorocyclopentadiene	4,600
Isophorone	3,200
Methyl bromide (Bromomethane)	3,200
Methylene chloride (Dichloromethane)	2,400
Nitrobenzene	1,000
Styrene	1,500
Tetrachloroethylene (Perchloroethylene)	650
Toluene	3,200
1,1,1-Trichlorobenzene	1,200
1,1,1-Trichloroethane	1,800
1,1,2-Trichloroethane	1,300
Trichloroethylene	2,700
Vinyl acetate	

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Chemical Name

Vinyl chloride
m-Xylene
o-Xylene
p-Xylene
Xylenes (total)

Ionizable Organics

2-Chlorophenol

C[sat] (mg/kg)

1,200
420
410
460
410

53,000

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TABLE B Tolerance Factor (K)

Tolerance factors (K) for one-sided normal tolerance intervals with probability level (confidence factor) $\gamma = 0.95$ and coverage $P = 93\%$. n = number of samples collected.

n	K	n	K
3	7.655	150	1.868
4	5.145	175	1.850
5	4.202	200	1.836
6	3.707	225	1.824
7	3.399	250	1.814
8	3.188	275	1.806
9	3.031	300	1.799
10	2.911	325	1.792
11	2.815	350	1.787
12	2.736	375	1.782
13	2.670	400	1.777
14	2.614	425	1.773
15	2.566	450	1.769
16	2.523	475	1.766
17	2.486	500	1.763
18	2.543	525	1.760
19	2.423	550	1.757
20	2.396	575	1.754
21	2.371	600	1.752
22	2.350	625	1.750
23	2.329	650	1.748
24	2.309	675	1.746
25	2.292	700	1.744
26	2.276	725	1.742
27	2.262	750	1.740
28	2.249	775	1.739
29	2.237	800	1.737
30	2.226	825	1.736
31	2.216	850	1.734
32	2.206	875	1.733
33	2.197	900	1.732
34	2.188	925	1.731
35	2.180	950	1.729
36	2.172	975	1.728
37	2.165	1000	1.727
38	2.158		
39	2.151		
40	2.146		
41	2.140		
42	2.136		
43	2.132		
44	2.128		
45	2.125		
46	2.122		
47	2.119		
48	2.116		
49	2.114		
50	2.112		
51	2.110		
52	2.108		
53	2.106		
54	2.104		
55	2.103		
56	2.101		
57	2.100		
58	2.099		
59	2.098		
60	2.097		
61	2.096		
62	2.095		
63	2.094		
64	2.093		
65	2.092		
66	2.091		
67	2.090		
68	2.089		
69	2.088		
70	2.087		
71	2.086		
72	2.085		
73	2.084		
74	2.083		
75	2.082		
76	2.081		
77	2.080		
78	2.079		
79	2.078		
80	2.077		
81	2.076		
82	2.075		
83	2.074		
84	2.073		
85	2.072		
86	2.071		
87	2.070		
88	2.069		
89	2.068		
90	2.067		
91	2.066		
92	2.065		
93	2.064		
94	2.063		
95	2.062		
96	2.061		
97	2.060		
98	2.059		
99	2.058		
100	2.057		
101	2.056		
102	2.055		
103	2.054		
104	2.053		
105	2.052		
106	2.051		
107	2.050		
108	2.049		
109	2.048		
110	2.047		
111	2.046		
112	2.045		
113	2.044		
114	2.043		
115	2.042		
116	2.041		
117	2.040		
118	2.039		
119	2.038		
120	2.037		
121	2.036		
122	2.035		
123	2.034		
124	2.033		
125	2.032		
126	2.031		
127	2.030		
128	2.029		
129	2.028		
130	2.027		
131	2.026		
132	2.025		
133	2.024		
134	2.023		
135	2.022		
136	2.021		
137	2.020		
138	2.019		
139	2.018		
140	2.017		
141	2.016		
142	2.015		
143	2.014		
144	2.013		
145	2.012		
146	2.011		
147	2.010		
148	2.009		
149	2.008		
150	2.007		
151	2.006		
152	2.005		
153	2.004		
154	2.003		
155	2.002		
156	2.001		
157	2.000		
158	1.999		
159	1.998		
160	1.997		
161	1.996		
162	1.995		
163	1.994		
164	1.993		
165	1.992		
166	1.991		
167	1.990		
168	1.989		
169	1.988		
170	1.987		
171	1.986		
172	1.985		
173	1.984		
174	1.983		
175	1.982		
176	1.981		
177	1.980		
178	1.979		
179	1.978		
180	1.977		
181	1.976		
182	1.975		
183	1.974		
184	1.973		
185	1.972		
186	1.971		
187	1.970		
188	1.969		
189	1.968		
190	1.967		
191	1.966		
192	1.965		
193	1.964		
194	1.963		
195	1.962		
196	1.961		
197	1.960		
198	1.959		
199	1.958		
200	1.957		
201	1.956		
202	1.955		
203	1.954		
204	1.953		
205	1.952		
206	1.951		
207	1.950		
208	1.949		
209	1.948		
210	1.947		
211	1.946		
212	1.945		
213	1.944		
214	1.943		
215	1.942		
216	1.941		
217	1.940		
218	1.939		
219	1.938		
220	1.937		
221	1.936		
222	1.935		
223	1.934		
224	1.933		
225	1.932		
226	1.931		
227	1.930		
228	1.929		
229	1.928		
230	1.927		
231	1.926		
232	1.925		
233	1.924		
234	1.923		
235	1.922		
236	1.921		
237	1.920		
238	1.919		
239	1.918		
240	1.917		
241	1.916		
242	1.915		
243	1.914		
244	1.913		
245	1.912		
246	1.911		
247	1.910		
248	1.909		
249	1.908		
250	1.907		
251	1.906		
252	1.905		
253	1.904		
254	1.903		
255	1.902		
256	1.901		
257	1.900		
258	1.899		
259	1.898		
260	1.897		
261	1.896		
262	1.895		
263	1.894		
264	1.893		
265	1.892		
266	1.891		
267	1.890		
268	1.889		
269	1.888		
270	1.887		
271	1.886		
272	1.885		
273	1.884		
274	1.883		
275	1.882		
276	1.881		
277	1.880		
278	1.879		
279	1.878		
280	1.877		
281	1.876		
282	1.875		
283	1.874		
284	1.873		
285	1.872		
286	1.871		
287	1.870		
288	1.869		
289	1.868		
290	1.867		
291	1.866		
292	1.865		
293	1.864		
294	1.863		
295	1.862		
296	1.861		
297	1.860		
298	1.859		
299	1.858		
300	1.857		
301	1.856		
302	1.855		
303	1.854		
304	1.853		
305	1.852		
306	1.851		
307	1.850		
308	1.849		
309	1.848		
310	1.847		
311	1.846		
312	1.845		
313	1.844		
314	1.843		
315	1.842		
316	1.841		
317	1.840		
318	1.839		
319	1.838		
320	1.837		
321	1.836		
322	1.835		
323	1.834		
324	1.833		
325	1.832		
326	1.831		
327	1.830		
328	1.829		
329	1.828		
330	1.827		
331	1.826		
332	1.825		
333	1.824		
334	1.823		
335	1.822		
336	1.821		
337	1.820		
338	1.819		
339	1.818		
340	1.817		
341	1.816		
342	1.815		
343	1.814		
344	1.813		
345	1.812		
346	1.811		
347	1.810		
348	1.809		
349	1.808		
350	1.807		
351	1.806		
352	1.805		
353	1.804		
354	1.803		
355	1.802		
356	1.801		

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TABLE C Coefficients $\{A_{N-1+i}\}$ for W Test of Normality, for $N=2(1)50$

i/N	2	3	4	5	6	7	8	9	10
1	0.7071	0.7071	0.6872	0.6646	0.6431	0.6233	0.6052	0.5888	0.5739
2	---	0.0000	1.677	2.413	2.806	3.031	3.164	3.244	3.291
3	---	---	---	0.0000	0.875	1.401	1.743	1.976	2.141
4	---	---	---	---	---	0.640	0.961	1.244	1.474
5	---	---	---	---	---	---	0.0000	0.299	0.579

i/N	11	12	13	14	15	16	17	18	19	20
1	0.5601	0.5475	0.5359	0.5251	0.5150	0.5056	0.4968	0.4886	0.4808	0.4734
2	3315	3325	3325	3318	3306	3290	3273	3253	3232	3211
3	2260	2247	2412	2460	2495	2521	2540	2553	2561	2565
4	1479	1586	1707	1802	1878	1939	1988	2027	2059	2085
5	0.695	0.922	1.099	1.240	1.353	1.447	1.524	1.587	1.641	1.686

i/N	21	22	23	24	25	26	27	28	29	30
1	0.4643	0.4590	0.4542	0.4493	0.4450	0.4407	0.4366	0.4328	0.4291	0.4254
2	3185	3156	3126	3098	3069	3043	3018	2992	2968	2944
3	2478	2571	2563	2554	2543	2533	2522	2510	2499	2487
4	2119	2131	2139	2145	2148	2151	2152	2151	2150	2148
5	1736	1764	1787	1807	1822	1836	1848	1857	1864	1870

i/N	31	32	33	34	35	36	37	38	39	40
1	0.3399	0.3443	0.3480	0.3512	0.3539	0.3563	0.3584	0.3601	0.3616	0.3630
2	1092	1150	1201	1245	1283	1316	1346	1372	1395	1415
3	0.804	0.878	0.941	0.997	1.046	1.089	1.128	1.162	1.192	1.219
4	0.530	0.618	0.696	0.764	0.823	0.876	0.923	0.965	1.002	1.036
5	0.263	0.368	0.459	0.539	0.610	0.672	0.728	0.778	0.822	0.862

i/N	41	42	43	44	45	46	47	48	49	50
1	0.0000	0.0122	0.0228	0.0321	0.0403	0.0476	0.0540	0.0598	0.0650	0.0697
2	---	---	0.0000	0.0107	0.0200	0.0284	0.0358	0.0424	0.0483	0.0537
3	---	---	---	---	0.0000	0.0094	0.0178	0.0253	0.0320	0.0381
4	---	---	---	---	---	---	0.0000	0.0084	0.0159	0.0227
5	---	---	---	---	---	---	---	---	0.0000	0.0076

Section 742.APPENDIX A: General

TABLE C: Coefficients $\{A_{N-1+i}\}$ for W Test of Normality, for $N=2(1)50$

i/N	2	3	4	5	6	7	8	9	10
1	0.7071	0.7071	0.6872	0.6646	0.6431	0.6233	0.6052	0.5888	0.5739
2	---	0.0000	1.677	2.413	2.806	3.031	3.164	3.244	3.291
3	---	---	---	0.0000	0.875	1.401	1.743	1.976	2.141
4	---	---	---	---	---	0.640	0.961	1.244	1.474
5	---	---	---	---	---	---	0.0000	0.299	0.579

i/N	11	12	13	14	15	16	17	18	19	20
1	0.5601	0.5475	0.5359	0.5251	0.5150	0.5056	0.4968	0.4886	0.4808	0.4734
2	3315	3325	3325	3318	3306	3290	3273	3253	3232	3211
3	2260	2247	2412	2460	2495	2521	2540	2553	2561	2565
4	1479	1586	1707	1802	1878	1939	1988	2027	2059	2085
5	0.695	0.922	1.099	1.240	1.353	1.447	1.524	1.587	1.641	1.686

i/N	21	22	23	24	25	26	27	28	29	30
1	0.4643	0.4590	0.4542	0.4493	0.4450	0.4407	0.4366	0.4328	0.4291	0.4254
2	3185	3156	3126	3098	3069	3043	3018	2992	2968	2944
3	2478	2571	2563	2554	2543	2533	2522	2510	2499	2487
4	2119	2131	2139	2145	2148	2151	2152	2151	2150	2148
5	1736	1764	1787	1807	1822	1836	1848	1857	1864	1870

i/N	31	32	33	34	35	36	37	38	39	40
1	0.3399	0.3443	0.3480	0.3512	0.3539	0.3563	0.3584	0.3601	0.3616	0.3630
2	1092	1150	1201	1245	1283	1316	1346	1372	1395	1415
3	0.804	0.878	0.941	0.997	1.046	1.089	1.128	1.162	1.192	1.219
4	0.530	0.618	0.696	0.764	0.823	0.876	0.923	0.965	1.002	1.036
5	0.263	0.368	0.459	0.539	0.610	0.672	0.728	0.778	0.822	0.862

i/N	41	42	43	44	45	46	47	48	49	50
1	0.0000	0.0122	0.0228	0.0321	0.0403	0.0476	0.0540	0.0598	0.0650	0.0697
2	---	---	0.0000	0.0107	0.0200	0.0284	0.0358	0.0424	0.0483	0.0537
3	---	---	---	---	0.0000	0.0094	0.0178	0.0253	0.0320	0.0381
4	---	---	---	---	---	---	0.0000	0.0084	0.0159	0.0227
5	---	---	---	---	---	---	---	---	0.0000	0.0076

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16	0.0000	0.0068	0.0311	0.0187	0.0239	0.0787	0.0331	0.0372	0.0609	0.0444
17	---	---	0.0000	0.0062	0.0119	0.0172	0.0220	0.0264	0.0305	0.0343
18	---	---	---	---	0.0057	0.0110	0.0158	0.0201	0.0244	---
19	---	---	---	---	---	---	0.0000	0.0053	0.0101	0.0146
20	---	---	---	---	---	---	---	---	0.0000	0.0049
17a	41	42	43	44	45	46	47	48	49	50
1	0.0940	0.0917	0.0894	0.0872	0.0850	0.0830	0.0808	0.0789	0.0770	0.0751
2	0.2719	0.2701	0.2684	0.2667	0.2651	0.2635	0.2620	0.2604	0.2589	0.2574
3	0.2357	0.2345	0.2334	0.2323	0.2313	0.2302	0.2291	0.2281	0.2271	0.2260
4	0.2091	0.2085	0.2078	0.2072	0.2065	0.2058	0.2052	0.2045	0.2038	0.2032
5	0.1876	0.1874	0.1871	0.1868	0.1865	0.1862	0.1859	0.1855	0.1851	0.1847
17a	41	42	43	44	45	46	47	48	49	50
6	0.1693	0.1694	0.1695	0.1695	0.1695	0.1695	0.1695	0.1693	0.1692	0.1691
7	0.1511	0.1535	0.1539	0.1542	0.1545	0.1548	0.1550	0.1551	0.1553	0.1554
8	0.1384	0.1392	0.1398	0.1405	0.1410	0.1415	0.1420	0.1421	0.1427	0.1430
9	0.1249	0.1259	0.1269	0.1278	0.1286	0.1293	0.1300	0.1306	0.1312	0.1317
10	0.1123	0.1136	0.1149	0.1160	0.1170	0.1180	0.1189	0.1197	0.1205	0.1212

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17a	31	32	33	34	35	36	37	38	39	40
1	0.4220	0.4188	0.4156	0.4127	0.4096	0.4068	0.4040	0.4015	0.3989	0.3964
2	0.2921	0.2898	0.2876	0.2854	0.2834	0.2813	0.2794	0.2774	0.2755	0.2737
3	0.2475	0.2463	0.2451	0.2439	0.2427	0.2415	0.2403	0.2391	0.2380	0.2368
4	0.2145	0.2141	0.2137	0.2132	0.2127	0.2121	0.2116	0.2110	0.2104	0.2098
5	0.1874	0.1878	0.1880	0.1882	0.1883	0.1883	0.1883	0.1881	0.1880	0.1878
17a	31	32	33	34	35	36	37	38	39	40
6	0.1641	0.1651	0.1660	0.1667	0.1673	0.1678	0.1683	0.1686	0.1689	0.1691
7	0.1433	0.1449	0.1463	0.1475	0.1487	0.1496	0.1503	0.1513	0.1520	0.1526
8	0.1243	0.1265	0.1284	0.1301	0.1317	0.1331	0.1344	0.1356	0.1366	0.1376
9	0.1066	0.1093	0.1118	0.1140	0.1160	0.1179	0.1196	0.1211	0.1225	0.1237
10	0.0899	0.0931	0.0961	0.0988	0.1013	0.1036	0.1056	0.1075	0.1092	0.1108
11	0.0739	0.0777	0.0812	0.0844	0.0873	0.0900	0.0924	0.0947	0.0967	0.0986
12	0.0585	0.0629	0.0669	0.0706	0.0739	0.0770	0.0798	0.0824	0.0848	0.0870
13	0.0435	0.0485	0.0530	0.0572	0.0610	0.0645	0.0677	0.0706	0.0733	0.0759
14	0.0289	0.0344	0.0395	0.0441	0.0484	0.0523	0.0559	0.0592	0.0622	0.0651
15	0.0144	0.0206	0.0262	0.0314	0.0361	0.0404	0.0444	0.0481	0.0515	0.0546

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TABLE D Percentage Points of the W Test for N=3(1)50

11	0.1004	0.1020	0.1035	0.1049	0.1067	0.1073	0.1085	0.1095	0.1105	0.1113
12	0.0981	0.0997	0.1012	0.1027	0.1043	0.1059	0.1072	0.1086	0.1098	0.1109
13	0.0958	0.0974	0.0989	0.1004	0.1019	0.1034	0.1046	0.1058	0.1069	0.1079
14	0.0935	0.0950	0.0965	0.0980	0.0994	0.1008	0.1019	0.1030	0.1040	0.1050
15	0.0912	0.0926	0.0940	0.0954	0.0968	0.0981	0.0991	0.1001	0.1011	0.1020
16	0.0889	0.0902	0.0915	0.0928	0.0941	0.0953	0.0963	0.0973	0.0982	0.0991
17	0.0866	0.0878	0.0890	0.0902	0.0914	0.0925	0.0935	0.0944	0.0953	0.0961
18	0.0843	0.0854	0.0865	0.0876	0.0886	0.0896	0.0905	0.0914	0.0922	0.0930
19	0.0820	0.0830	0.0840	0.0850	0.0860	0.0869	0.0877	0.0885	0.0893	0.0900
20	0.0797	0.0806	0.0815	0.0824	0.0833	0.0841	0.0849	0.0856	0.0863	0.0870
21	0.0774	0.0782	0.0790	0.0798	0.0806	0.0813	0.0820	0.0827	0.0833	0.0840
22	0.0751	0.0758	0.0765	0.0772	0.0779	0.0785	0.0791	0.0797	0.0802	0.0808
23	0.0728	0.0734	0.0740	0.0746	0.0752	0.0757	0.0762	0.0767	0.0772	0.0777
24	0.0705	0.0710	0.0715	0.0720	0.0725	0.0730	0.0734	0.0738	0.0743	0.0747
25	0.0682	0.0686	0.0690	0.0694	0.0698	0.0702	0.0706	0.0709	0.0713	0.0717
26	0.0659	0.0662	0.0665	0.0668	0.0671	0.0674	0.0677	0.0680	0.0683	0.0686
27	0.0636	0.0638	0.0640	0.0642	0.0644	0.0646	0.0648	0.0650	0.0652	0.0654
28	0.0613	0.0615	0.0617	0.0619	0.0621	0.0623	0.0625	0.0627	0.0629	0.0631
29	0.0590	0.0591	0.0593	0.0595	0.0597	0.0599	0.0601	0.0603	0.0605	0.0607
30	0.0567	0.0568	0.0569	0.0571	0.0572	0.0574	0.0576	0.0578	0.0580	0.0582
31	0.0544	0.0545	0.0546	0.0548	0.0549	0.0551	0.0552	0.0554	0.0556	0.0558
32	0.0521	0.0522	0.0523	0.0525	0.0526	0.0528	0.0529	0.0531	0.0532	0.0534
33	0.0498	0.0499	0.0500	0.0501	0.0503	0.0504	0.0506	0.0507	0.0509	0.0511
34	0.0475	0.0476	0.0477	0.0478	0.0480	0.0481	0.0483	0.0484	0.0486	0.0488
35	0.0452	0.0453	0.0454	0.0456	0.0457	0.0459	0.0460	0.0462	0.0463	0.0465

2	0.01	0.05
3	0.753	0.767
4	0.687	0.748
5	0.686	0.762
6	0.713	0.788
7	0.730	0.803
8	0.749	0.818
9	0.764	0.833
10	0.781	0.848
11	0.792	0.862
12	0.805	0.874
13	0.814	0.881
14	0.825	0.887
15	0.835	0.892
16	0.844	0.897
17	0.851	0.901
18	0.858	0.905
19	0.863	0.908
20	0.868	0.911
21	0.873	0.914
22	0.878	0.916
23	0.881	0.918
24	0.886	0.920
25	0.891	0.923
26	0.894	0.924
27	0.896	0.926
28	0.898	0.927
29	0.900	0.927
30	0.902	0.927
31	0.904	0.927
32	0.906	0.927
33	0.908	0.927
34	0.908	0.927
35	0.910	0.927

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TABLE 2. SSI Chemicals with Noncarcinogenic Toxic Effects on Specific Target Organs/Organ Systems or Similar Modes of Action

Kidney
Acetone
Adoniam
Chlorobenzene
Dibromobenzene
1,1-Dichloroethane
Di-n-octyl phthalate
Endosulfan
Ethylbenzene
Fluoranthene
Nitrobenzene
Pyrene
Toluene
2,4,5-Trichlorophenol
Vinyl acetate

Liver
Acenaphthene
Acetone
Butylbenzyl phthalate
Chlorobenzene
Di-n-octyl phthalate
Endrin
Ethylbenzene
Fluoranthene
Nitrobenzene
Picloram
Styrene
2,4,5-TP (Silvex)
Toluene
2,4,5-Trichlorophenol

Central Nervous System

Butanol
Cyanide (amendable)
2,4-Dimethylpheno-1
Endrin
Manganese
2-Methylphenol
Mercury
Styrene
Xylenes

Circulatory System

Antimony

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Barium
2,4-D cis-1,2-Dichloroethylene
Nitrobenzene
trans 1,2-Dichloroethylene
2,4-Dimethylphenol
Fluoranthene
Fluorene
Styrene
Zinc

Gastrointestinal System

Endothall
Hexachlorocyclopentadiene
Methyl bromide

Reproductive System

Barium
Carbon disulfide
Chlorobenzene
2-Chlorophenol
1,2 Dibromo-3-Chloropropane (inhalation only)
Dinoseb
Methoxychlor
Phenol

Cholinesterase Inhibition

Aldicarb
Carbofuran

Decreased Body Weight Gains and Circulatory System Effects

Ketazine
Salmaline
Adrenal Gland
Nitrobenzene
1,2,4-Trichlorobenzene

Respiratory System

1,2-Dichloropropane
Hexachlorocyclopentadiene
Methyl bromide
Vinyl acetate

Immune System

2,4-Dichlorophenol
p-Chloroaniline

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TABLE P Range of Concentrations of Inorganic Chemicals in Background Soils

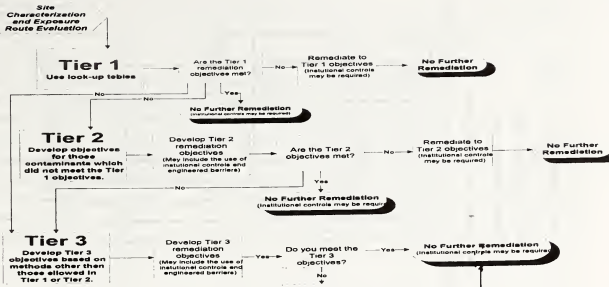
Chemical Name	Counties Within Metropolitan Statistical Areas (mg/kg)		Counties Outside Metropolitan Statistical Areas (mg/kg)	
	Metropolitan	Statistical Areas (a)	Metropolitan	Statistical Areas
Aluminum	1,388 - 37,200		2,640 - 23,300	
Antimony	0.24 - 8		0.18 - 8.6	
Arsenic	1.1 - 24		0.35 - 22.4	
Barium	ND(b) (<5) - 1,720		22.4 - 253	
Beryllium	0.05 - 9.9		ND (<0.02) - 8.8	
Cadmium	ND (<2.5) - 8.2		ND (<0.1) - 8.2	
Calcium	81 - 20,000		630 - 184,000	
Chromium	ND (<2.14) - 151		4.3 - 32	
Cobalt	2.1 - 23		0.9 - 32	
Copper	ND (<2.93) - 156		1 - 42	
Cyanide	ND (<0.07) - 2.7		ND (<0.06) - 1.2	
Iron	5,000 - 80,000		3,200 - 29,100	
Lead	4.7 - 647		ND (<7.44) - 270	
Magnesium	541 - 74,500		476 - 24,100	
Manganese	155 - 5,590		61.5 - 3,710	
Mercury	0.02 - 0.99		ND (<0.01) - 1.67	
Nickel	ND (<3.1) - 135		ND (<5) - 34.6	
Potassium	270 - 5,820		280 - 5,600	
Selenium	ND (<0.12) - 2.6		ND (<0.1) - 1.7	
Silver	ND (<0.32) - 5.6		ND (<0.06) - 5.9	
Sodium	26.2 - 1,290		14.1 - 7,600	
Sulfate	17.6 - 240		10 - 260	
Sulfide	ND (<1.00) - 0.1		ND (<0.1) - 8.8	
Vanadium	ND (<2.5) - 80		0.85 - 2.8	
Zinc	23 - 798		ND (<5.5) - 400	

(a) Counties within Metropolitan Statistical Areas: Boone, Champaign, Clinton, Cook, DuPage, Grundy, Henry, Jersey, Kane, Kankakee, Kendall, Lake, Macon, Madison, McHenry, McLean, Menard, Monroe, Peoria, Rock Island, Sangamon, St. Clair, Tazewell, Will, Winnebago, and Woodford.

(b) ND = Below the Detection Limit

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ILLUSTRATION A Developing Soil Remediation Objectives Under the Tiered Approach



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ILLUSTRATION B Developing Groundwater Remediation Objectives Under the Tiered Approach



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Section 742.APPENDIX B Tier 1 Tables and Illustrations

TABLE A Tier 1 Soil Remediation Objectives(a) for Residential Properties

CAS No	Chemical Name	Exposure Route Specific Values for Soils		Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
83-32-9	Acetophenone	4,700 ^b	...	570 ^b	2,800	*
67-64-1	Acetone	7,800 ^b	100,000 ^d	16 ^b	16	*
15972-60-8	Alachlor ^c	8 ^b	...	0.04	0.2	NA
116-06-3	Aldicarb ^c	70 ^b	...	0.013	0.07	NA
309-00-2	Aldrin	0.04 ^c	3 ^c	0.5 ^c	2.5	*
120-12-7	Anthracene	23,000 ^b	...	12,000 ^b	60,000	*
1912-24-9	Atrazine ^c	2700 ^b	...	0.066	0.33	NA
71-43-2	Benzene	22 ^c	0.8 ^c	0.63	0.15	*
56-55-3	Benzo(a)anthracene	0.9 ^c	...	2	10	*

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CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
56-23-5	Carbon tetrachloride	5 ^a	0.3 ^a	0.07	0.35	*
57-74-9	Chlordane	0.5 ^a	20 ^a	10	50	*
108-90-7	Chlorobenzene (Monochlorobenzene)	1,600 ^b	130 ^b	1	5	*
128-48-1	Chlorodibromomethane (Dibromochloromethane)	1,400 ^b	1,300 ^b	0.4	2	*
67-66-3	Chloroform	100 ^c	0.3 ^c	0.6	3	*
218-01-9	Chrysene	88 ^a	— ^a	160	800	*
94-75-7	2,4-D	780 ^b	— ^b	1.5	7.7	*
75-99-0	Dalapon	2,300 ^c	— ^c	0.85	8.5	1.2
72-54-8	DDD	3 ^a	— ^a	16 ^a	80	*
72-55-9	DDE	2 ^a	— ^a	54 ^a	270	*
50-29-3	DDT	2 ^a	— ^a	32 ^a	160	*

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CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
205-99-2	Benzochloranthrene	0.9 ^a	— ^a	5	25	*
207-08-9	Benzodifuranthene	9 ^a	— ^a	49	240	*
50-32-8	Benzotriptyrene	0.09 ^a	— ^a	8	80	*
111-44-4	Bis(2-chloroethyl)ether	0.6 ^a	0.2 ^a	0.0004 ^a	0.0034	0.66
117-81-7	Bin(2-ethylhexyl)phthalate	46 ^a	31,000 ^b	3,600	31,000 ^c	*
75-27-4	Bromodichloromethane (Dichlorobromomethane)	10 ^a	3,000 ^b	0.6	3	*
75-25-2	Bromoform	81 ^a	3 ^a	0.8	4	*
71-36-3	Butanol	7,800 ^c	10,000 ^d	17 ^a	17	NA
85-68-7	Butyl benzyl phthalate	16,000 ^b	930 ^c	930 ^d	930 ^e	*
86-74-8	Carbazole	32 ^a	— ^a	—	—	NA
1503-66-2	Carbofuran ^a	300 ^b	— ^b	0.22	1.1	NA
75-15-0	Carbon disulfide	7,800 ^b	720 ^c	32 ^a	160	*

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CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
75-35-4	1,1-Dichloroethylene	630 ^a	1,500 ^a	0.06	0.3	*
156-59-2	cis-1,2-Dichloroethylene	780 ^a	1,500 ^a	0.4	1.1	*
156-60-5	trans-1,2-Dichloroethylene	1,600 ^b	1,100 ^a	0.7	3.5	*
78-97-5	1,2-Dichloropropane	9 ^a	15 ^b	0.03	1.5	*
542-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, cis + trans)	4 ^a	0.1 ^a	0.004 ^a	0.02	0.005
60-57-1	Dieldrin ^a	0.04 ^a	1 ^a	0.004 ^a	0.02	*
84-66-2	Diethyl phthalate	63,000 ^b	2,000 ^b	470 ^b	470	*
121-14-2	2,4-Dinitrofluorene	0.9 ^a	— ^a	0.0008 ^a	0.0008	0.013
606-20-2	2,6-Dinitrofluorene	0.9 ^a	— ^a	0.0007 ^a	0.0007	0.0067
117-84-0	Di-n-octyl phthalate	1,600 ^b	10,000 ^b	10,000 ^b	10,000 ^b	*
115-29-7	Endosulfan	470 ^b	— ^a	18 ^b	18	*

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
53-70-3	Dibenz(a,h)anthracene	0.001 ^a	— ^a	2	10	*
96-12-8	1,2-Dibromo-3-chloropropane	0.40 ^a	16 ^a	0.002	0.002	*
106-93-4	1,2-Dibromochloroethane (Ethylene dibromide)	0.0075 ^a	0.24 ^a	0.0004	0.004	0.005
84-74-2	Di-n-butyl phthalate	7,800 ^b	2,300 ^b	2,300 ^b	2,300 ^b	*
95-50-1	1,2-Dichlorobenzene (o-Dichlorobenzene)	7,000 ^b	560 ^b	17	85	*
106-46-7	1,4-Dichlorobenzene (p-Dichlorobenzene)	— ^a	— ^a	2	10	*
91-84-1	3,3'-Dichlorobenzidine	1 ^a	— ^a	0.007 ^a	0.015 ^a	1.3
75-34-3	1,1-Dichloroethane	7,800 ^b	1,300 ^b	23 ^b	110	*
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	7 ^a	0.4 ^a	0.02	0.1	*

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CAS No	Chemical Name	Exposure Route-Specific Values for Soils		Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
67-72-1	Hexachloroethane	78 ^a	...	0.5 ^b	0.5	*
193-39-5	Indeno(1,2,3-c,d)pyrene	0.9 ^c	...	14	70	*
78-59-1	Isophorone	15,600 ^d	4,600 ^d	8 ^e	8	*
72-43-5	Methoxychlor	390 ^f	...	160	800	*
74-83-9	Methyl bromide (Bromomethane)	110 ^g	10 ^h	0.2 ⁱ	0.2	*
75-09-2	Methylene chloride (Dichloromethane)	85 ^j	13 ^j	0.02 ^j	0.2	*
91-20-3	Naphthalene	3,100 ^k	...	84 ^k	130	*
98-95-3	Nitrobenzene	39 ^l	92 ^l	0.1 ^l	0.1	0.26
1918-02-1	Picloram ^m	5,500 ⁿ	...	2	20	NA
1336-36-3	Polychlorinated biphenyls (PCBs) ^o	1, 10 ^p	2 ^q	...	...	*

CAS No	Chemical Name	Exposure Route-Specific Values for Soils		Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
145-73-3	Endosulf ^r	1,800 ^s	...	0.4	0.4	NA
72-20-8	Endrin	23 ^t	...	1	5	*
100-41-4	Ethylbenzene	7,800 ^u	400 ^u	13	19	*
206-44-0	Fluoranthene	3,100 ^v	...	4,300 ^v	21,000 ^v	*
86-73-7	Fluticene	3,100 ^w	...	560 ^w	2,800	*
76-46-8	Hepachlor	0.1 ^x	0.1 ^x	23	110	*
1024-57-3	Heptachlor epoxide	0.07 ^y	5 ^y	0.7	1.5	*
118-74-1	Hexachlorobenzene	0.4 ^z	1 ^z	2	20	*
319-84-6	alpha-HCH (alpha-BHC)	0.1 ^{aa}	0.8 ^{aa}	0.0005 ^{ab}	0.0025	0.002
58-89-9	gamma-HCH (Lindane) ^{ac}	0.5 ^{ad}	...	0.009	0.045	*
77-47-4	Hexachlorocyclopentadiene	550 ^{ae}	10 ^{af}	400	2,200 ^{af}	*

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CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
75-01-4	Vinyl chloride	0.5 ^a	0.05 ^a	0.01 ^a	0.05	*
108-38-3	m-Xylene	160,000 ^b	420 ^a	210	210	*
95-47-6	o-Xylene	160,000 ^b	410 ^a	190	190	*
106-42-3	p-Xylene	160,000 ^b	460 ^a	200	200	*
1330-20-7	Xylenes (total)	160,000 ^b	410 ^a	190	190	*
	Ionizable Organics					
65-83-0	Benzoic Acid	310,000 ^b	...	400 ^a	400 ^a	*
106-47-8	4-Chloroaniline (p-Chloroaniline)	310 ^a	...	0.7 ^a	0.7	1.3
95-57-8	2-Chlorophenol	390 ^a	53,000 ^b	4 ^a	4 ^a	*
120-83-2	2,4-Dichlorophenol	230 ^a	...	1 ^a	1 ^a	*
105-67-9	2,4-Dimethylphenol	1,600 ^a	...	9 ^a	9	*

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CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
129-00-0	Pyrene	2,300 ^a	...	4,200 ^a	21,000	*
122-34-9	Simazine ^a	790 ^a	...	0.04	0.4	NA
100-42-5	Styrene	16,000 ^b	1,500 ^a	4	20	*
127-18-4	Tetrachloroethylene (Perchloroethylene)	12 ^a	11 ^a	0.06	0.3	*
108-88-3	Toluene	16,000 ^b	650 ^a	12	30	*
8001-35-2	Terphenyl ^a	0.6 ^a	89 ^a	31	150	*
120-82-1	1,2,4-Trichlorobenzene	780 ^a	3,300 ^a	5	50	*
71-55-6	1,1,1-Trichloroethane	...	1,200 ^a	2	10	*
79-00-5	1,1,2-Trichloroethane	310 ^a	1,800 ^a	0.02	0.2	*
79-01-6	Trichloroethylene	58 ^a	5 ^a	0.06	0.1	*
108-05-4	Vinyl acetate	78,000 ^b	1,000 ^a	170 ^a	170	*

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CAS No	Chemical Name	Exposure Route-specific Values for Soils		Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L) TCLP	Class II (mg/L) TCLP	
	Inorganics					
7440-36-0	Antimony	31 ^a	...	0.006 ^a	0.024 ^a	*
7440-38-2	Arsenic ^a	0.4 ^a	150 ^a	0.01 ^a	0.2 ^a	*
7440-39-3	Barium	5,500 ^a	600,000 ^a	2.0 ^a	2.0 ^a	*
7440-41-7	Beryllium	0.1 ^a	1,300 ^a	0.004 ^a	0.5 ^a	*
7440-42-8	Boron	7,000 ^a	...	2.0 ^a	2.0 ^a	*
7440-43-9	Cadmium ^a	70 ^a	1,800 ^a	0.005 ^a	0.05 ^a	*
16887-00-6	Chloride	*	...	200 ^a	200 ^a	*
7440-47-3	Chromium, total	390 ^a	270 ^a	0.1 ^a	1.0 ^a	*
16065-83-1	Chromium, ion, trivalent	78,000 ^a	...	...	...	*
18540-29-9	Chromium, ion, hexavalent	390 ^a	270 ^a	*
7440-48-4	Cobalt	4,700 ^a	...	1.0 ^a	1.0 ^a	*

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CAS No.	Chemical Name	Exposure Route-Specific Values for Soils		Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	Class II (mg/kg)	
51-28-5	2,4-Dinitrophenol	160 ^a	...	0.3 ^a	0.3	3.3
88-83-7	Dinitro ^b	70 ^a	...	0.34 ^a	3.4	*
95-48-7	2-Methylphenol	3,900 ^a	...	15 ^a	15	*
86-30-6	<i>N</i> -Narcosodiphenylamine	130 ^a	...	1 ^a	1	*
621-64-7	<i>N</i> -Narcosod- <i>n</i> -propylamine	0.08 ^a	...	0.00005 ^a	0.00005	0.66
87-86-5	Pentachlorophenol	3 ^a	...	0.01 ^a	0.15	2.4
108-95-2	Phenol	47,000 ^a	...	100 ^a	100	*
99-72-1	2,4,5-TP (Silver)	630 ^a	...	11 ^a	35 ^a	*
95-95-4	2,4,5-Trichlorophenol	7,800 ^a	...	270 ^a	1,200 ^a	*
88-06-2	2,4,6-Trichlorophenol	58 ^a	200 ^a	0.2 ^a	0.2	0.43

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CAS No	Chemical Name	Exposure Route-specific Values for Soils		Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L) TCLP	Class II (mg/L) TCLP	
7440-22-4	Silver	390 ^a	...	0.05 ^{na}	...	*
14808-79-8	Sulfate	...	...	400 ^{na}	400 ^{na}	*
7440-38-0	Thallium	...	...	0.002 ^{na}	0.02 ^{na}	*
7440-62-2	Vanadium	550 ^a	...	0.049 ^{na}	...	*
7440-66-6	Zinc ^c	23,000 ^a	...	5.0 ^{na}	10 ^{na}	*

** indicates that the ADL is less than or equal to the specified cleanup objective
NA means not available; no PQL or EQL available in USEPA analytical methods

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CAS No	Chemical Name	Exposure Route-specific Values for Soils		Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L) TCLP	Class II (mg/L) TCLP	
7440-50-8	Copper ^a	2,900 ^a	...	0.65 ^{na}	0.65 ^{na}	*
57-12-3	Cyanide (amenable)	1,600 ^a	...	0.3 ^{na}	0.6 ^{na}	*
7782-41-4	Fluoride	4,700 ^a	...	4.0 ^{na}	4.0 ^{na}	*
15438-31-0	Iron	...	...	5.0 ^{na}	5.0 ^{na}	*
7439-92-1	Lead	400 ^a	...	0.0075 ^{na}	0.1 ^{na}	*
7439-96-5	Manganese	3,900 ^a	74,000 ^a	0.15 ^{na}	10.0 ^{na}	*
7439-97-6	Mercury ^{na}	23 ^{na}	10 ^{na}	0.002 ^{na}	0.01 ^{na}	*
7440-02-0	Nickel ^f	1,600 ^a	13,000 ^a	0.1 ^{na}	2.0 ^{na}	*
14797-55-4	Nitrate as N ^b	130,000 ^a	...	10.0 ^{na}	100 ^{na}	*
7782-49-2	Selenium ⁺	390 ^a	...	0.05 ^{na}	0.05 ^{na}	*

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Chemical Name and Soil Cleanup Objective Notations

- (a) Soil cleanup objectives based on human health criteria only.
- (b) Calculated values correspond to a target hazard quotient of 1.
- (c) No toxicity criteria available for the route of exposure.
- (d) Soil saturation concentration (Csat) = the concentration at which the absorptive limits of the soil particles, the solubility limits of the available soil moisture, and saturation of soil pore air have been reached. Above the soil saturation concentration, the assumptions regarding vapor transport to air and/or dissolved phase transport to groundwater (for chemicals which are liquid at ambient soil temperatures) have been violated, and alternative modeling approaches are required.
- (e) Calculated values correspond to a cancer risk level of 1 in 1,000,000.
- (f) Level is at or below Contract Laboratory Program required quantitation limit for Regular Analytical Services (RAS).
- (g) Chemical-specific properties are such that this route is not of concern at any soil contaminant concentration.
- (h) A preliminary goal of 1 ppm has been set for PCBs based on Guidance on Remedial Actions for Superfund Sites with PCB Contamination, EPA/540G-90/007, and on USEPA efforts to manage PCB contamination. See 40 CFR 761.120 - USEPA "PCB Spill Cleanup Policy." This regulation goes on to say that the cleanup goal for an unrestricted area is 10 ppm and 25 ppm for a restricted area, provided both have at least 10 inches of clean cover.
- (i) Soil cleanup objective for pH of 6.8. If soil pH is other than 6.8, refer to Appendix B, Tables C and D of this Part.
- (j) Ingestion soil cleanup objective adjusted by a factor of 0.5 to account for dermal route.
- (k) A preliminary remediation goal of 400 mg/kg has been set for lead based on Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, OSWER Directive #9355.4-12.
- (l) Potential for soil-plant-human exposure.
- (m) Concentration in mg/L determined by the Toxicity Characteristic Leaching Procedure (TCLP). The person conducting the remediation has the option to use TCLP cleanup objectives listed in this Table or the

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- applicable pH-specific soil cleanup objectives listed in Appendix B, Tables C and D of this Part. If the person conducting the remediation wishes to utilize soil cleanup objectives based on background and concentrations, this should be done in accordance with Subpart D of this Part.
- (n) The Agency reserves the right to evaluate the potential for remaining contaminant concentrations to pose significant threats to crops, livestock, or wildlife.
- (o) For agricultural facilities, cleanup objectives for surficial soils which are based on field application rates may be more appropriate for currently registered pesticides. Consult the Agency for further information.
- (p) For agricultural facilities, soil cleanup objectives based on site-specific background concentrations of Nitrate as N may be more appropriate. Such determinations shall be conducted in accordance with the procedures set forth in Subparts D and I of this Part.
- (q) For cyanide, the TCLP extraction must be done using water at a pH of 7.0.
- (r) Value based on dietary Reference Dose.
- (s) Value based on Reference Dose for Mercuric chloride (CAS No. 7487-94-7).
- (t) Note that Table value is likely to be less than background concentration for this chemical; screening or remediation concentrations using the procedures of Subpart D of this Part may be more appropriate.

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TABLE B Tier 1 Soil Remediation Objectives(a) for Industrial/Commercial Properties

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils				Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker		Class I (mg/kg)	ClassII (mg/kg)	ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)			
83-32-9	Acenaphthene	120,000 ^b	.....^c	120,000 ^b	.....^c	370 ^d	2,800	*
67-64-1	Acetone	200,000 ^b	100,000 ^b	200,000 ^b	100,000 ^b	10 ^b	16	*
15972-60-8	Alachlor ^e	72 ^e	.....^c	1,600 ^e	.....^c	0.04	0.2	NA
116-06-3	Aldicarb ^e	2,000 ^e	.....^c	200 ^e	.....^c	0.013	0.07	NA
309-00-2	Aldrin	0.3 ^e	6.6 ^e	6.1 ^e	9.3 ^e	0.3 ^e	2.5	*
120-12-7	Amtracene	610,000 ^b	.....^c	610,000 ^b	.....^c	12,000 ^b	60,000	*
1912-24-9	Atrazine ^e	72,000 ^b ^c	7,100 ^b ^c	0.066	0.33	NA
71-43-2	Benzene	200 ^e	1.5 ^e	4,300 ^e	1.7 ^e	0.03	0.15	*

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CAS No	Chemical Name	Exposure Route-Specific Values for Soils				Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker		Class I (mg/kg)	ClassII (mg/kg)	ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)			
56-55-3	Benzo(a)anthracene	8 ^e	.....^c	170 ^e	.....^c	2	10	*
205-99-2	Benzo(b)fluoranthene	8 ^e	.....^c	170 ^e	.....^c	5	25	*
207-08-9	Benzo(k)fluoranthene	78 ^e	.....^c	1,700 ^e	.....^c	49	240	*
50-32-8	Benzo(a)pyrene	0.8 ^e	.....^c	17 ^e	.....^c	8	80	*
117-81-7	Bis(2-ethylhexyl)phthalate	410 ^d	31,000 ^d	4,100 ^d	31,000 ^d	3,600	31,000 ^d	*
75-27-4	Bromodichloromethane (Dichlorobromomethane)	92 ^e	3,000 ^d	2,000 ^d	3,000 ^d	0.6	3	*
75-25-2	Bromodorm	720 ^d	100 ^e	16,000 ^d	140 ^e	0.8	4	*
71-36-3	Butanol	200,000 ^b	10,000 ^b	200,000 ^b	10,000 ^b	17 ^b	17	NA
85-68-7	Butyl benzyl phthalate	410,000 ^b	930 ^e	410,000 ^b	930 ^e	930 ^e	930 ^e	*
86-74-8	Carbazole	290 ^e ^c	6,200 ^e ^c	NA

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CAS No.	Chemical Name	Exposure Route-Specific Values for Soils				Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker		Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)			
72-54-8	DDD	24 ^a	----- ^a	520 ^a	----- ^a	16 ^a	80	*
72-55-9	DDE	17 ^a	----- ^a	370 ^a	----- ^a	54 ^a	270	*
50-28-3	DDT	17 ^a	1,300 ^a	100 ^a	2,100 ^a	32 ^a	160	*
55-70-3	Dibenzofuran, Anthracene	0.8 ^a	----- ^a	17 ^a	----- ^a	2	10	*
96-12-8	1,2-Dibromo-3-chloropropane	4 ^a	17 ^a	89 ^a	0.11 ^a	0.002	0.002	*
106-93-4	1,2-Dibromoethane (Ethylene dibromide)	0.07 ^a	0.32 ^a	1.5 ^a	0.45 ^a	0.004	0.004	0.005
84-74-2	Di-n-butyl phthalate	200,000 ^b	2,300 ^b	200,000 ^b	2,300 ^b	2,300 ^b	2,300 ^b	*
95-50-1	1,2-Dichlorobenzene (p-Dichlorobenzene)	180,000 ^b	560 ^b	18,000 ^b	340 ^b	17	85	*
106-46-7	1,4-Dichlorobenzene (p-Dichlorobenzene)	----- ^a	17,000 ^b	----- ^a	350 ^b	1	10	*

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CAS No.	Chemical Name	Exposure Route-Specific Values for Soils				Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker		Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)			
1503-66-2	Carbaryl ^a	10,000 ^b	----- ^a	1,000 ^a	----- ^a	0.22	1.1	NA
75-15-0	Carbon disulfide	300,000 ^b	720 ^b	20,000 ^b	9.0 ^b	32 ^a	160	*
56-23-5	Carbon tetrachloride	44 ^a	0.64 ^a	410 ^b	0.90 ^a	0.07	0.35	*
57-74-9	Chlordane	4 ^a	38 ^a	12 ^b	53 ^a	10	50	*
108-90-7	Chlorobenzene (Monochlorobenzene)	41,000 ^b	210 ^b	4,100 ^b	1.5 ^b	1	5	*
124-48-1	Chlorodibromomethane (Dibromochloromethane)	41,000 ^b	1,300 ^b	41,000 ^b	1,300 ^b	0.4	2	*
67-66-3	Chloroform	940 ^a	0.54 ^a	2,000 ^b	0.76 ^a	0.6	3	*
218-01-9	Chrysene	780 ^a	----- ^a	17,000 ^b	----- ^a	160	800	*
94-75-7	2,4-D	20,000 ^b	----- ^a	2,000 ^b	----- ^a	1.5	7.7	*
75-99-0	Dalapon	61,000 ^b	----- ^a	6,100 ^b	----- ^a	0.85	8.5	1.2

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CAS No.	Chemical Name	Exposure Route-Specific Values for Soils				Migration to Groundwater: Portion of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker		Class I (mg/kg)	ClassII (mg/kg)	ADI (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)			
121-14-2	2,4-Dinitrotoluene	8.4 ^a	.....^a	180 ^a	.....^a	0.0008 ^a	0.0008	0.013
609-20-2	2,6-Dinitrotoluene	8.4 ^a	.....^a	180 ^a	.....^a	0.0007 ^a	0.0007	0.0067
117-84-0	Di-n-octyl phthalate	41,000 ^a	10,000 ^a	4,100 ^a	10,000 ^a	10,000 ^a	10,000 ^a	*
115-29-7	Endosulfan	12,000 ^a	.....^a	1,200 ^a	.....^a	18 ^a	18	*
145-73-3	Endosulfan ^b	41,000 ^a	.....^a	4,100 ^a	.....^a	0.4	0.4	NA
72-20-8	Endrin	610 ^a	.....^a	61 ^a	.....^a	1	5	*
100-41-4	Ethylbenzene	200,000 ^a	400 ^a	20,000 ^a	50 ^a	11	19	*
206-44-0	Fluoranthene	82,000 ^a	.....^a	82,000 ^a	.....^a	4,300 ^a	21,000	*
86-73-7	Fluorene	82,000 ^a	.....^a	82,000 ^a	.....^a	50 ^a	2,800	*
76-48-8	Heptachlor	1 ^a	11 ^a	28 ^a	16 ^a	21	110	*
1024-57-3	Heptachlor epoxide	0.6 ^a	9.2 ^a	2.7 ^a	13 ^a	0.7	3.5	*

CAS No.	Chemical Name	Exposure Route-Specific Values for Soils				Migration to Groundwater: Portion of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker		Class I (mg/kg)	ClassII (mg/kg)	ADI (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)			
91-94-1	3,3'-Dichlorobenzidine	13 ^a	.....^a	280 ^a	.....^a	0.007 ^a	0.035	1.3
75-34-3	1,1-Dichloroethane	200,000 ^a	1,700 ^a	200,000 ^a	140 ^a	23 ^a	110	*
107-06-2	1,2-Dichloroethane (Ethylene dichloride)	63 ^a	0.70 ^a	1,400 ^a	0.99 ^a	0.02	0.1	*
75-35-4	1,1-Dichloroethylene	18,000 ^a	.....^a	1,800 ^a	.....^a	0.06	0.3	*
156-59-2	cis-1,2-Dichloroethylene	20,000 ^a	1,200 ^a	20,000 ^a	1,200 ^a	0.4	1.1	*
156-60-5	trans-1,2-Dichloroethylene	41,000 ^a	3,100 ^a	41,000 ^a	3,100 ^a	0.7	3.5	*
78-07-5	1,2-Dichloropropane	84 ^a	23 ^a	1,800 ^a	0.50 ^a	0.03	1.5	*
342-75-6	1,3-Dichloropropene (1,3-Dichloropropylene, cis + trans)	33 ^a	0.23 ^a	610 ^a	0.33 ^a	0.004 ^a	0.02	0.005
60-57-1	Dieldrin ^b	0.4 ^a	2.2 ^a	7.8 ^a	3.1 ^a	0.004 ^a	0.02	0.0013
84-66-2	Diethyl phthalate	1,000,000 ^a	2,000 ^a	1,000,000 ^a	2,000 ^a	430 ^a	470	*

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CAS No	Chemical Name	Exposure Route-Specific Values for Soils				Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker		Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)			
91-20-3	Naphthalene	82,000 ^a	.....^a	8,200 ^a	.....^a	84 ^a	130	*
98-95-3	Nitrobenzene	1,000 ^b	150 ^b	1,000 ^b	10 ^b	0.1 ^{b,1}	0.1	0.26
1918-02-1	Pickering ^c	140,000 ^b	.....^a	14,000 ^b	.....^a	2	20	NA
1336-36-3	Polychlorinated biphenyls (PCBs) ^c	1, 10, 25 ^a	.....^a	1 ^a	.....^a	.....^a	.....^a	*
129-00-0	Pyrene	61,000 ^b	.....^a	61,000 ^b	.....^a	4,200 ^b	21,000	*
122-34-9	Somaten ^c	10,000 ^b	.....^a	1,000 ^b	.....^a	0.04	0.4	NA
100-42-5	Styrene	410,000 ^b	1,500 ^b	41,000 ^b	470 ^b	4	20	*
127-18-4	Tetrachloroethylene (Perchloroethylene)	110 ^c	20 ^c	2,400 ^c	31 ^c	0.06	0.3	*
108-88-3	Toluene	410,000 ^b	650 ^b	410,000 ^b	47 ^b	11	30	*
8001-35-2	Tosaphene ^c	5.2 ^a	170 ^a	110 ^a	260 ^a	31	150	*

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CAS No	Chemical Name	Exposure Route-Specific Values for Soils				Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker		Class I (mg/kg)	Class II (mg/kg)	ADL (mg/kg)
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)			
118-74-1	Hexachlorobenzene	4 ^a	1.9 ^a	78 ^a	2.6 ^a	2	20	*
319-84-6	alpha HCH (alpha BHC)	0.9 ^a	1.5 ^a	20 ^a	2.1 ^a	0.0005 ^{a,1}	0.0025	0.002
58-89-9	gamma HCH (Lindane) ^c	4 ^a	.....^a	96 ^a	.....^a	0.009	0.045	*
77-47-4	Hexachlorocyclopentadiene	14,000 ^b	17 ^b	14,000 ^b	1.1 ^b	400	2,200 ^b	*
67-72-1	Hexachloroethane	2,000 ^b	.....^a	2,000 ^b	.....^a	0.5 ^a	0.5	*
193-39-5	Indene(1,2,3-c,d)pyrene	8 ^a	.....^a	170 ^a	.....^a	14	70	*
78-59-1	Isophorene	410,000 ^b	4,600 ^b	410,000 ^b	4,600 ^b	4 ^a	8	*
72-43-5	Methoxychlor	10,000 ^b	.....^a	1,000 ^b	.....^a	160	800	*
74-83-9	Methyl bromide (Bromomethane)	2,900 ^b	15 ^b	1,000 ^b	4.3 ^b	0.2 ^a	0.2	*
75-09-2	Methylene chloride (Dichloromethane)	760 ^a	25 ^a	12,000 ^b	18 ^a	0.67 ^a	0.2	*

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CAS No.	Chemical Name	Exposure Route-Specific Values for Soils				Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Industrial-Commercial		Construction Worker				
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)			
	Ionizable Organics							
106-47-8	4-Chloroaniline (p-Chloroaniline)	8,200 ^a	.....^a	820 ^a	.....^a	0.7 ^a	0.7	1.3
95-57-8	2-Chlorophenol	10,000 ^b	53,000 ^a	10,000 ^b	53,000 ^a	4 ^a	4 ^a	*
120-83-2	2,4-Dichlorophenol	8,100 ^a	.....^a	610 ^a	.....^a	1 ^a	1 ^a	*
105-67-9	2,4-Dimethylphenol	41,000 ^b	.....^a	41,000 ^b	.....^a	9 ^a	9	*
51-28-5	2,4-Dinitrophenol	4,100 ^b	.....^a	410 ^a	.....^a	0.3 ^a	0.3 ^a	3.3
88-85-7	Dinitro ^c	2,000 ^a	.....^a	200 ^a	.....^a	0.34 ^a	3.4 ^a	*
95-48-7	2-Methylphenol (o-Cresol)	100,000 ^b	.....^a	100,000 ^b	.....^a	15 ^a	15	*
86-30-6	N-Nitrosodiphenylamine	1,200 ^a	.....^a	25,000 ^a	.....^a	1 ^a	1	0.66
621-64-7	N-Nitrosod-n-propylamine	0.4 ^a ^a	18 ^a ^a	0.00005 ^a	0.00005	0.66
87-86-5	Pentachlorophenol	24 ^a ^a	520 ^a ^a	0.03 ^a	0.15 ^a	2.4

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CAS No.	Chemical Name	Exposure Route-Specific Values for Soils				Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		ADL (mg/kg)
		Industrial-Commercial		Construction Worker		Class I (mg/kg)	ClassII (mg/kg)	
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)			
120-42-1	1,2,4-Trichlorobenzene	20,000 ^a	3,200 ^a	2,000 ^a	1,000 ^a	5	50	*
71-55-6	1,1,1-Trichloroethane	.....^a	1,200 ^b	.....^a	1,200 ^b	2	10	*
79-00-5	1,1,2-Trichloroethane	8,200 ^a	.....^a	1,200 ^b	.....^a	0.02	0.2	*
79-01-6	Trichloroethylene	520 ^a	8.9 ^a	1,200 ^b	14 ^a	0.06	0.3	*
108-05-4	Vinyl acetate	1,000,000 ^b	1,600 ^b	200,000 ^a	11 ^a	170 ^a	170	*
75-01-4	Vinyl chloride	3 ^a	0.31 ^a	85 ^a	0.47 ^a	6.01 ^a	9.05 ^a	*
108-38-3	m-Xylene	1,000,000	420 ^a	410,000 ^a	420 ^a	210	210	*
95-47-6	o-Xylene	1,000,000	410 ^a	410,000 ^a	410 ^a	190	190	*
106-42-3	p-Xylene	1,000,000	460 ^a	410,000 ^a	460 ^a	200	200	*
1330-20-7	Xylenes (total)	1,000,000 ^a	410 ^a	410,000 ^a	410 ^a	190	190	*
65-85-0	Benzoic Acid	1,000,000 ^b ^a	820,000 ^a ^a	400 ^a	400 ^a	*

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CAS No		Chemical Name	Exposure Route-Specific Values for Soils				Migration to Groundwater Portion of the Groundwater Exposure Route Values	
			Industrial- Commercial		Construction Worker		Class I (mg/L)	Class II (mg/L)
			Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)		
		Inorganics						
7440-36-0	Antimony	820 ^b	.....^c	82 ^a	.....^c	0.006 ^m	0.024 ^m	*
7440-38-2	Arsenic ³⁺	5 ¹	1,200 ^f	61 ³	25,000 ^f	0.05 ^m	0.2 ^m	*
7440-39-3	Barium	140,000 ^f	910,000 ^f	14,000 ^f	870,000 ^f	2.0 ^m	2.0 ^m	*
7440-41-7	Beryllium	1 ¹	2,100 ^f	29 ^f	44,000 ^f	0.004 ^m	0.5 ^m	*
7440-42-8	Boron	180,000 ^f	1,000,000 ^f	18,000 ^f	1,000,000 ^f	2.0 ^m	2.0 ^m	*
7440-43-9	Cadmium ²⁺	2,000 ¹	2,800 ^f	200 ¹	59,000 ^f	0.005 ^m	0.05 ^m	*
16887-00-6	Chloride	.....^c	.....^c	.....^c	.....^c	200 ^m	200 ^m	*
7440-47-3	Chromium, total	10,000 ^f	420 ^f	4,100 ^f	8,800 ^f	0.1 ^m	1.0 ^m	*
16065-83-1	Chromium, ion, trivalent	1,000,000 ^f ^c	330,000 ^f ^c ^a ^a	*
18540-20-9	Chromium, ion, hexavalent	10,000 ^f	420 ^f	4,100 ^f	8,800 ^f	*

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		Exposure Route-Specific Values for Soils				Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		
		Industrial-Commercial		Construction Worker				
CAS No	Chemical Name	Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/kg)	ClassII (mg/kg)	ADL (mg/kg)
108-95-2	Phenol	1,000,000 ^f	.....^c	120,000 ^f	.....^c	100 ^f	100	*
93-72-1	2,4,5-TP (Silvex)	16,000 ^f	.....^c	1,600 ^f	.....^c	11 ^f	55 ^f	*
95-95-4	2,4,5-Trichlorophenol	200,000 ^f ^c	200,000 ^f ^c	270 ¹	1,200 ^f	*
88-66-2	2,4,6-Trichlorophenol	520 ^f	390 ^f	11,000 ^f	590 ^f	0.2 ¹ , ^c	0.2 ^f	0.43

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		Exposure Route-Specific Values for Soils				Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		
CAS No.	Chemical Name	Industrial-Commercial		Construction Worker		Class I (mg/L)	Class II (mg/L)	
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)			
7440-22-4	Silver	10,000 ^a	.....^a	1,000 ^a	.....^a	0.05 ^a	.....	*
14808-79-8	Sulfate	.....^a	.....^a	.....^a	.....^a	400 ^a	400 ^a	*
7440-28-0	Thallium	.....^a	.....^a	.....^a	.....^a	0.002 ^a	0.02 ^a	*
7440-62-2	Vanadium	14,000 ^b	.....^a	1,400 ^a	.....^a	0.049 ^a	.....	*
7440-66-6	Zinc ^c	610,000 ^b	.....^a	61,000 ^b	.....^a	5.0 ^a	10 ^a	*

* indicates that the ADL is less than or equal to the specified cleanup objective.

NA means Not Available; no PQL or EQL available in USEPA analytical methods

Chemical Name and Soil Cleanup Objective Notations (2nd, 5th thru 8th Column)

- ^a Soil cleanup objectives based on human health criteria only
- ^b Calculated values correspond to a target hazard quotient of 1.
- ^c No toxicity criteria available for this route of exposure.
- ^d Soil saturation concentration (C_{sat}) = the concentration at which the absorptive limits of the soil particles, the solubility limits of the available soil moisture, and saturation of soil pore air have been reached. Above the soil saturation concentration, the assumptions regarding vapor transport to air and/or dissolved phase transport to groundwater (for chemicals which are liquid at ambient soil temperatures) have been violated, and alternative modeling approaches are required.
- ^e Calculated values correspond to a cancer risk level of 1 in 1,000,000. Site-specific conditions may warrant use of a greater risk level but not to exceed 1 in 10,000.

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CAS No.	Chemical Name	Exposure Route-Specific Values for Soils				Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route Values		
		Industrial- Commercial		Construction Worker				
		Ingestion (mg/kg)	Inhalation (mg/kg)	Ingestion (mg/kg)	Inhalation (mg/kg)	Class I (mg/L)	Class II (mg/L)	
7440-48-4	Cobalt	120,000 ^b	.....^a	12,000 ^b	.....^a	1.0 ^a	1.0 ^a	*
7440-50-8	Copper ^a	82,000 ^b	.....^a	8,200 ^b	.....^a	0.65 ^a	0.65 ^a	*
57-12-5	Cyanide (amenable)	41,000 ^b	.....^a	4,100 ^b	.....^a	0.2 ^a	0.6 ^a	*
7782-41-4	Fluoride	120,000 ^b	.....^a	12,000 ^b	.....^a	4.0 ^a	4.0 ^a	*
13438-31-0	Iron	.....^a	.....^a	.....^a	.....^a	5.0 ^a	5.0 ^a	*
7439-92-1	Lead	400 ^b	.....^a	400 ^b	.....^a	0.0075 ^a	0.1 ^a	*
7439-96-5	Manganese	100,000 ^b	91,000 ^b	10,000 ^b	9,700 ^b	0.15 ^a	10.0 ^a	*
7439-97-6	Mercury ^a	610 ^b	540,000 ^b	61 ^a	52,000 ^b	0.002 ^a	0.01 ^a	*
7440-02-0	Nickel ^a	41,000 ^b	21,000 ^b	4,100 ^b	440,000 ^b	0.1 ^a	2.0 ^a	*
14797-55-8	Nitrate as N ^a	1,000,000 ^b ^a	330,000 ^b ^a	10.0 ^a	100 ^a	*
7782-49-2	Selenium ^a	10,000 ^b ^a	1,000 ^b ^a	0.05 ^a	0.05 ^a	*

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Leaching procedure (TCLP). The person conducting the remediation has the option to use TCLP cleanup objectives listed in this Table or the applicable pH-specific soil cleanup objectives in Appendix B, Tables C or D of this Part. If the person wishes to calculate cleanup objectives based on background concentrations, this should be done in accordance with Subpart D of this Part.

- (n) The Agency reserves the right to evaluate the potential for remaining contaminant concentrations to pose significant threats to crops, livestock, or wildlife.
- (o) For agricultural facilities, cleanup objectives for surficial soils which are based on field application rates may be more appropriate for currently registered pesticides. Consult the Agency for further information.
- (p) For agricultural facilities, soil cleanup objectives based on site-specific background concentrations of Nitrate as N may be more appropriate. Such determinations shall be conducted in accordance with the procedures located in Subparts D and I of this Part.
- (q) For cyanide, the TCLP extraction must be done using water at a pH of 7.0.
- (r) Value based on Dietary Reference Dose.
- (s) Value based on Reference Dose for Mercuric chloride (CAS No. 7487-94-7).
- (t) Note that Table value is likely to be less than background concentration for this chemical; screening or remediation concentrations using the procedures of Subpart D of this Part.

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Chemical Name and Soil Cleanup Objective Notations (2nd, 5th thru 8th columns)

- (a) Soil cleanup objectives based on human health criteria only.
- (b) Calculated values correspond to a target hazard quotient of 1.
- (c) No toxicity criteria available for this route of exposure.
- (d) Soil saturation concentration (Csat) = the concentration at which the absorptive limits of the soil particles, the solubility limits of the available soil moisture, and saturation of soil pore air have been reached. Above the soil saturation concentration, the assumptions regarding vapor transport to air and/or dissolved phase transport to groundwater (for chemicals which are liquid at ambient soil temperatures) have been violated, and alternative modeling approaches are required.
- (e) Calculated values correspond to a cancer risk level of 1 in 1,000,000. Site-specific conditions may warrant use of a greater risk level but not to exceed 1 in 10,000.
- (f) Level is at or below Contract Laboratory Program required quantitation limit for Regular Analytical Services (RAS).
- (g) Chemical-specific properties are such that this route is not of concern at any soil contaminant concentration.
- (h) A preliminary goal of 1 ppm has been set for PCBs based on Guidance on Remedial Actions for Superfund Sites with PCB Contamination, EPA/540-G-90/007, and on USDOH efforts to manage PCB contamination. See 40 CFR 761.120 for the USEPA "PCB Spill Cleanup Policy." This regulation goes on to state that the cleanup goal for an unrestricted area is 100 ppm and 25 ppm for a restricted area, provided both have at least 10 inches of clean cover.
- (i) Soil cleanup objective for pH of 6.8. If soil pH is other than 6.8, refer to Appendix B, Tables C and D in this Part.
- (j) Ingestion soil cleanup objective adjusted by a factor of 0.5 to account for dermal route.
- (k) A preliminary remediation goal of 400 mg/kg has been set for lead based on Revised Interim Soil Lead Guidance for CERCLA Sites and Corrective Action Facilities, OSWER Directive #9355.4-12.
- (l) Potential for soil-plant-human exposure.
- (m) Concentration in mg/L determined by the Toxicity Characteristic

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TABLE C pH Specific Soil Remediation Objectives for Inorganics and Ionizing Organics for the Migration to Groundwater Portion of the Groundwater Ingestion Route (Class I Groundwater)

Chemical (totals) (mg/kg)	pH 4.5 to 4.74	pH 4.75 to 5.24	pH 5.25 to 5.74	pH 5.75 to 6.24	pH 6.25 to 6.64	pH 6.65 to 6.89	pH 6.9 to 7.24	pH 7.25 to 7.74	pH 7.75 to 8.0
Inorganics									
Antimony	5	5	5	5	5	5	5	5	5
Arsenic	25	26	27	28	29	29	29	30	31
Barium	260	490	850	1,200	1,500	1,600	1,700	1,800	2,100
Beryllium	1.1	2.1	3.4	6.6	22	63	140	1,000	8,000
Cadmium	1.0	1.7	2.7	3.7	5.2	7.5	11	59	430
Chromium (+6)	70	62	54	46	40	38	36	32	28
Copper	330	580	2,100	11,000	59,000	130,000	200,000	330,000	330,000
Cyanide	40	40	40	40	40	40	40	40	40
Mercury	0.01	0.01	0.03	0.15	0.89	2.1	3.3	6.4	8.0
Nickel	20	36	56	76	100	130	180	700	3,800
Selenium	24	17	12	8.8	6.3	5.2	4.5	3.3	2.4
Silver	0.24	0.33	0.62	1.5	4.4	8.5	13	39	110

Section 742.APPENDIX B: Tier I Tables and Illustrations

Table C: pH Specific Soil Remediation Objectives for Inorganics and Ionizing Organics for the Migration to Groundwater Portion of the Groundwater Ingestion Route (Class I Groundwater)

Chemical (totals) (mg/kg)	pH 4.5 to 4.74	pH 4.75 to 5.24	pH 5.25 to 5.74	pH 5.75 to 6.24	pH 6.25 to 6.64	pH 6.65 to 6.89	pH 6.9 to 7.24	pH 7.25 to 7.74	pH 7.75 to 8.0
Thallium	1.6	1.8	2.0	2.4	2.6	2.8	3.0	3.4	3.8
Vanadium	980	980	980	980	980	980	980	980	980
Zinc	1,000	1,800	2,600	3,600	5,100	6,700	7,500	16,000	53,000
Organics									
Benzoic Acid	440	420	410	400	400	400	400	400	400
2-Chlorophenol	3.5	3.5	3.5	3.5	3.4	3.4	3.4	3.2	2.7
2,4-Dichlorophenol	1.1	1.1	1.1	1.1	1.1	1.0	1.0	0.90	0.72
Dinoseb	8.4	4.5	1.9	0.82	0.43	0.34	0.31	0.27	0.25
Pentachlorophenol	0.54	0.32	0.15	0.07	0.04	0.03	0.02	0.02	0.02
2,4,5-TP (Silvex)	26	16	12	11	11	11	11	11	11
2,4,5-Trichlorophenol	350	340	340	320	280	270	200	110	56
2,4,6-Trichlorophenol	0.37	0.36	0.34	0.26	0.20	0.15	0.13	0.09	0.07

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Chemical (totals) (mg/kg)	pH 4.5 to 4.74	pH 4.75 to 5.24	pH 5.25 to 5.74	pH 5.75 to 6.24	pH 6.25 to 6.64	pH 6.65 to 6.89	pH 6.9 to 7.24	pH 7.25 to 7.74	pH 7.75 to 8.0
Organics									
Benzoic Acid	440	420	410	400	400	400	400	400	400
2-Chlorophenol	3.5	3.5	3.5	3.5	3.4	3.4	3.4	3.2	2.7
2,4-Dichlorophenol	1.1	1.1	1.1	1.1	1.1	1.0	1.0	0.90	0.72
Dioxin	84	45	19	8.2	4.3	3.4	3.1	2.7	2.5
Pentachlorophenol	2.7	1.6	0.75	0.33	0.18	0.15	0.12	0.11	0.10
2,4,5-TP (Silvex)	130	79	62	57	55	55	55	55	55
2,4,5-Trichlorophenol	1,700	1,700	1,700	1,600	1,400	1,200	1,000	860	280
2,4,6-Trichlorophenol	0.37	0.36	0.34	0.26	0.20	0.15	0.13	0.09	0.07

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TABLE D. pH Specific Soil Remediation Objectives for Inorganics and Ionizing Organics for the Migration to Groundwater Portion of the Groundwater Ingestion Route (Class II Groundwater)

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Table D: pH Specific Soil Remediation Objectives for Inorganics and Ionizing Organics for the Migration to Groundwater Portion of the Groundwater Ingestion Route (Class II Groundwater)

Chemical (totals) (mg/kg)	pH 4.5 to 4.74	pH 4.75 to 5.24	pH 5.25 to 5.74	pH 5.75 to 6.24	pH 6.25 to 6.64	pH 6.65 to 6.89	pH 6.9 to 7.24	pH 7.25 to 7.74	pH 7.75 to 8.0
Inorganics									
Antimony	20	20	20	20	20	20	20	20	20
Arsenic	100	100	100	110	110	120	120	120	120
Barium	260	490	850	1,200	1,500	1,600	1,700	1,800	2,100
Beryllium	140	260	420	820	2,800	7,900	17,000	130,000	1,000,000
Caesium	10	17	27	37	52	75	110	590	4,300
Chromium (+6)	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Copper	330	580	2,100	11,000	59,000	130,000	200,000	330,000	330,000
Cyanide	120	120	120	120	120	120	120	120	120
Mercury	0.05	0.06	0.14	0.75	4.4	10	16	32	40
Nickel	400	720	1,100	1,500	2,000	2,600	3,500	14,000	76,000
Selenium	24	17	12	8.8	6.3	5.2	4.5	3.3	2.4
Thallium	16	18	20	24	26	28	30	34	38
Zinc	2,000	3,600	5,200	7,200	10,000	12,000	15,000	32,000	110,000

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TABLE 2 Tier 1 Groundwater Remediation Objectives for the Direct Ingestion of Groundwater Portion of the Groundwater Ingestion Route

CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)	Groundwater Cleanup Objective
83-32-9	Acenaphthene	0.42	2.1	
67-64-1	Acetone	0.7	0.7	
1597-60-8	Alachlor	0.002(c)	0.01(c)	
116-06-3	Aldicarb	0.003(c)	0.015(c)	
309-00-2	Aldrin	0.0004(a)	0.0004(a)	
120-12-7	Anthrane	0.003(c)	10.5	
71-42-9	Benazine	0.003(c)	0.015(c)	
71-42-9	Benazine	0.005(c)	0.025(c)	
56-55-3	Benzo(a)anthracene	0.00013(a)	0.00065	
205-99-2	Benzo(b)fluoranthene	0.00018(a)	0.00085	
207-08-9	Benzo(k)fluoranthene	0.00017(a)	0.00085	
50-32-8	Benzo(a)pyrene	0.0002(a,c)	0.002(c)	
111-44-4	Bis(2-chloroethyl)ether	0.01(a,c)	0.01	
117-81-7	Bis(2-ethylhexyl)phthalate	0.006(a,c)	0.06(c)	
75-27-4	Bromodichloromethane	0.0002(a)	0.0001	
75-25-2	(Dichlorobromomethane)	0.0002(a)	0.0002	
71-36-3	Butenol	0.7	0.7	
85-68-7	Butyl benzyl phthalate	1.4	7.0	
86-74-8	Carbazole	---	---	
1563-66-2	Carbofuran	0.04(c)	0.2(c)	
75-15-0	Carbon disulfide	0.7	3.5	
56-23-5	Carbon tetrachloride	0.005(c)	0.025(c)	
57-74-9	Chlordane	0.01(c)	0.01(c)	
108-90-7	Chlorobenzene	0.1(c)	0.5(c)	
124-48-1	(Monochlorobenzene)	0.14	0.14	
67-66-3	(Dichlorobenzene)	0.0002(a)	0.0001	
218-01-9	Chloroform	0.0015(a)	0.0075	
94-75-7	Chrysene	0.07(c)	0.35(c)	
2,4-D	Dalapon	0.2(c)	2.0(c)	
75-99-0	DDD	0.0011(a)	0.00055	
72-54-8	DDT	0.0004(a)	0.0002	
72-55-9	DDE	0.00012(a)	0.0006	
50-29-3	DDT	0.0003(a)	0.0015	
53-70-3	Dibenz(a,h)anthracene	0.0002(c)	0.0002(c)	
96-12-8	1,2-Dibromo-3-chloropropane	0.0005(a,c)	0.0005(c)	
106-93-4	(Ethylene dibromide)	0.0005(a,c)	0.0005(c)	
84-74-2	Di-n-butyl phthalate	0.7	3.5	

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CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)	Groundwater Cleanup Objective
95-50-1	1,2-Dichlorobenzene	0.075(c)	0.375(c)	
106-46-7	(o-Dichlorobenzene)	0.6(c)	1.5(c)	
91-34-1	1,4-Dichlorobenzene	0.02(a)	0.1	
75-34-3	(p-Dichlorobenzene)	0.5	0.5	
107-06-2	1,1-Dichloroethane	0.005(c)	0.025(c)	
75-35-4	1,2-Dichloroethane	0.007(c)	0.035(c)	
156-53-2	(Ethylene dichloride)	0.07(c)	0.2(c)	
135-60-5	cis-1,2-Dichloroethylene	0.1(c)	0.5(c)	
78-97-5	trans-1,2-Dichloroethylene	0.005(c)	0.025(c)	
542-75-6	1,2-Dichloropropane	0.001(a)	0.005	
	1,3-Dichloropropane			
	(1,3-Dichloropropylene, cis + trans)	0.0002(a)	0.0001	
60-57-1	Dieldrin	5.6	5.6	
84-66-2	Diethyl phthalate	0.0002	0.0002	
121-16-2	Diethyl sebacate	0.0001	0.0001	
88-95-7	2,4-Dinitrotoluene(a)	0.007(c)	0.07(c)	
117-81-0	Diosin	0.14	0.7	
115-29-7	Di-n-octyl phthalate	0.042	0.042	
145-73-3	Endosulfan	0.1(c)	0.1(c)	
72-20-8	Endrin	0.002(c)	0.01(c)	
100-41-4	Ethylbenzene	0.7(c)	1.0(c)	
76-44-8	Fluorene	0.28	1.4	
76-44-8	Heptachlor epoxide	0.0004(c)	0.002(c)	
118-71-3	Heptachlor	0.0006(a)	0.0006(a)	
319-84-6	Hexachlorobenzene	0.00015	0.00015	
58-89-6	alpha-HCH (alpha-BHC)	0.0002(c)	0.002(c)	
77-47-4	gamma-HCH (lindane)	0.05(c)	0.5(c)	
67-72-1	Hexachlorocyclopentadiene	0.007	0.007	
133-39-5	Hexachloroethane	0.0025(a)	0.0025(a)	
78-59-1	Indeno(1,2,3-c,d)pyrene	1.4	1.4	
72-43-5	Isophorone	0.0098	0.0098	
74-83-9	Methoxychlor	0.05(c)	0.05(c)	
75-09-2	Methyl bromide	0.05(c)	0.05(c)	
91-20-3	(Bromomethane)	0.039	0.039	
98-95-3	Methylene chloride	0.0035	0.0035	
1918-02-1	Naphthalene(2)	5.0(c)	5.0(c)	
	Nitrobenzene(2)			
	Picloram			

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Groundwater Cleanup Objective

CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)
1336-36-3	Polychlorinated biphenyls (PCBs) (n)	0.0005(c)	0.0025(c)
129-00-0	Pyrene	0.21	1.05
122-34-9	Stiazine	0.004(c)	0.04(c)
100-42-5	Styrene	0.05(c)	0.5(c)
93-72-1	2,4,5-TP (Silverx)	0.05(c)	0.25(c)
127-18-4	Tetrachloroethylene	0.005(c)	0.025(c)
	Trichloroethylene		
108-98-3	Toluene	1.0(c)	2.5(c)
4001-95-2	Toluene	0.00(c)	0.015(c)
120-92-1	1,2,4-Trichlorobenzene	0.07(c)	0.7(c)
71-58-6	1,1,1-Trichloroethane	0.2(c)	1.0(c)
79-00-5	1,1,2-Trichloroethane	0.005(c)	0.05(c)
79-01-6	Trichloroethylene	0.005(c)	0.025(c)
108-05-4	Vinyl acetate	7.0	7.0
75-01-4	Vinyl chloride	0.002(c)	0.01(c)
1330-20-7	Xylenes (total)	10.0(c)	10.0(c)

Ionizable Organics

65-85-0	Benzoic Acid	28	28
106-47-8	4-Chloroaniline	0.028	0.028
	(p-Chloroaniline)		
95-57-8	2-Chlorophenol	0.035	0.035
120-83-2	2,4-Dichlorophenol	0.021	0.021
105-67-9	2,4-Dimethylphenol	0.14	0.14
51-28-5	2,4-Dinitrophenol	0.014	0.014
95-48-7	2-Methylphenol	0.35	0.35
	(o-Cresol)		
96-30-6	4-Nitrophenylamine	0.01(a)	0.01
621-64-7	N-Nitrosodipropylamine	0.01(a)	0.01
87-86-5	Pentachlorophenol	0.001(a,c)	0.005(c)
108-95-2	Phenol	0.1(c)	0.1(c)
95-95-4	2,4,5-Trichlorophenol	0.7	3.5
88-06-2	2,4,6-Trichlorophenol	0.0064(a)	0.0064

Inorganics

7440-36-0	Antimony	0.006(c)	0.024(c)
7440-38-2	Arsenic	0.05(c)	0.2(c)
7440-39-3	Barium	2.0(c)	2.0(c)
7440-41-7	Beryllium	0.004(c)	0.5(c)
7440-42-8	Boron	2.0(c)	2.0(c)
7440-43-9	Cadmium	0.005(c)	0.05(c)

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Groundwater Cleanup Objective

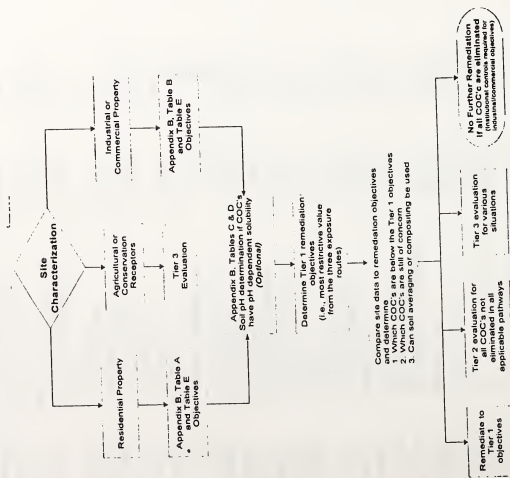
CAS No.	Chemical Name	Class I (mg/L)	Class II (mg/L)
16987-00-6	Chloride	200(c)	200(c)
7440-47-3	Chromium, total	0.1(c)	1.0(c)
18540-29-9	Chromium, ion, hexavalent	---	---
7440-48-4	Cobalt	1.0(c)	1.0(c)
7440-50-8	Copper	0.2(c)	0.65(c)
57-12-5	Cyanide	0.2(c)	0.6(c)
7782-41-4	Fluoride	4.0(c)	4.0(c)
15438-31-0	Iron	5.0(c)	5.0(c)
7439-92-1	Lead	0.0075(c)	0.1(c)
7439-96-5	Manganese	0.15(c)	10.0(c)
7439-97-6	Mercury	0.002(c)	0.01(c)
7440-02-0	Nickel	0.1(c)	2.0(c)
14797-55-8	Nitrate as N	10.0(c)	100(c)
7782-49-2	Selenium	0.05(c)	0.05(c)
7440-22-4	Silver	0.05(c)	400(c)
14808-79-8	Sulfate	0.00(c)	0.02(c)
7440-28-0	Thallium	0.049	---
7440-62-2	Vanadium	0.049	---
7440-66-6	Zinc	5.0(c)	10(c)

Chemical Name and Groundwater Cleanup Objective Notations

- (a) The groundwater Health Advisory concentration is equal to ADL for carcinogens.
 (b) Oral Reference Dose and/or Reference Concentration under review by USFPA. Listed values subject to change.
 (c) Value listed is also the Groundwater Quality Standard for this chemical pursuant to 35 Ill. Adm. Code 620.410 for Class I Groundwater or 35 Ill. Adm. Code 620.420 for Class II Groundwater.

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ILLUSTRATION A Tier 1 Evaluation



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Section 742.APPENDIX C Tier 2 Tables and Illustrations

TABLE A SL Equations

Section 742.APPENDIX C: Tier 2 Tables and Illustrations

Table A: SSL Equations

Equations for Soil Ingestion Exposure Route	Remediation Objectives for Noncarcinogenic Contaminants (mg/kg)	$\frac{THI_{SL} \cdot BW \cdot AT \cdot 365 \frac{d}{yr}}{RfD_{SL} \cdot 10^{-6} \frac{kg}{mg} \cdot EF \cdot ED \cdot IR_{soil}}$	N1
	Remediation Objectives for Carcinogenic Contaminants - Residential (mg/kg)	$\frac{TR \cdot AT \cdot 365 \frac{d}{yr}}{SF \cdot 10^{-6} \frac{kg}{mg} \cdot EF \cdot IF_{res} \cdot ED}$	N2
	Remediation Objectives for Carcinogenic Contaminants - Industrial/Commercial, Construction Worker (mg/kg)	$\frac{TR \cdot BW \cdot AT \cdot 365 \frac{d}{yr}}{SF \cdot 10^{-6} \frac{kg}{mg} \cdot EF \cdot ED \cdot IR_{ind}}$	N3
Equations for Inhalation Exposure Route (Volatiles)	Remediation Objectives for Noncarcinogenic Contaminants - Residential/Industrial/Commercial (mg/kg)	$\frac{THI_{SL} \cdot AT \cdot 365 \frac{d}{yr}}{EF \cdot ED \cdot \left(\frac{1}{RfC} + \frac{1}{IRF} \right)}$	N4

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Equations for Inhalation Exposure Route (Fugitive Dusts)	Remediation Objectives for Noncarcinogenic Contaminants - Residential, Industrial/Commercial (mg/kg)	$\frac{THQ \cdot AT \cdot 365 \frac{d}{yr}}{EF \cdot ED \cdot \left(\frac{1}{RfC} + \frac{1}{PEF} \right)}$	S11
	Remediation Objectives for Noncarcinogenic Contaminants - Construction Worker (mg/kg)	$\frac{THQ \cdot AT_c \cdot 365 \frac{d}{yr}}{EF \cdot ED \cdot \left(\frac{1}{RfC} + \frac{1}{PEF} \right)}$	S12
	Remediation Objectives for Carcinogenic Contaminants - Residential, Industrial/Commercial (mg/kg)	$\frac{TR \cdot AT_r \cdot 365 \frac{d}{yr}}{URF \cdot 1,000 \frac{ug}{mg} \cdot EF \cdot ED \cdot \frac{1}{PEF}}$	S13
	Remediation Objectives for Carcinogenic Contaminants - Construction Worker (mg/kg)	$\frac{TR \cdot AT_c \cdot 365 \frac{d}{yr}}{URF \cdot 1,000 \frac{ug}{mg} \cdot EF \cdot ED \cdot \frac{1}{PEF}}$	S14
	Equation for Derivation of Particulate Emission Factor, PEF (m ³ /kg)	$PEF = \frac{Q}{C} \cdot \frac{3,600 \frac{s}{hr}}{0.036 \cdot (1 - V) \cdot \left(\frac{U_m}{U_r} \right)^3 \cdot F(t)}$	S15

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Remediation Objectives for Noncarcinogenic Contaminants - Construction Worker (mg/kg)	$\frac{THQ \cdot AT \cdot 365 \frac{d}{yr}}{EF \cdot ED \cdot \left(\frac{1}{RfC} + \frac{1}{PEF} \right)}$	S5
Remediation Objectives for Carcinogenic Contaminants - Residential, Industrial/Commercial (mg/kg)	$\frac{TR \cdot AT_r \cdot 365 \frac{d}{yr}}{URF \cdot 1,000 \frac{ug}{mg} \cdot EF \cdot ED \cdot \frac{1}{PEF}}$	S6
Remediation Objectives for Carcinogenic Contaminants - Construction Worker (mg/kg)	$\frac{TR \cdot AT_c \cdot 365 \frac{d}{yr}}{URF \cdot 1,000 \frac{ug}{mg} \cdot EF \cdot ED \cdot \frac{1}{PEF}}$	S7
Equation for Derivation of the Volatilization Factor - Residential, Industrial/Commercial, VF (m ³ /kg)	$VF = \frac{Q}{C} \cdot \frac{(314 \cdot D_v \cdot T)^{1/2}}{(2 \cdot \rho_h \cdot D_d)} \cdot 10^{-4} \frac{m^2}{cm^2}$	S8
Equation for Derivation of the Volatilization Factor - Construction Worker, VF (m ³ /kg)	$VF = \frac{VF}{10}$	S9
Equation for Derivation of Apparent Diffusivity, D _a (cm ² /s)	$D_a = \frac{(\rho_d^{1/3} \cdot D_v \cdot T)^2 \cdot (\rho_w^{1/3} \cdot D_w)}{\eta^2} \cdot \frac{1}{(\rho_h \cdot K_d) + \theta_w \cdot (\theta_u \cdot T)}$	S10

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Groundwater Remediation Objective for Carcinogenic Contaminants, GW_{AO} (mg/L)	$TR \cdot BW \cdot AT_c \cdot 365 \frac{d}{yr}$ $NF_c \cdot IR_c \cdot EF \cdot ED$	S23
Total Soil Porosity, η (L_{air}/L_{soil})	$\eta = 1 - \frac{\rho_s}{\rho_w}$	S24
Equation for Estimation of Mixing Zone Depth, d (m)	$d = \{0.0112 \cdot L^2\}^{0.5} + d_1 \left[1 - \exp \left(\frac{-L \cdot \eta}{K_d \cdot i \cdot d_1} \right) \right]$	S25
Mass Limit Volatilization Factor for the Inhalation Exposure Route - Residential, Industrial Commercial, VF (m ³ /kg)	$VF_{M-L} = \frac{Q}{C} \cdot \left[\frac{f \cdot (315 \cdot 10^7 \frac{1}{yr})}{\rho_b \cdot J_a \cdot 10^6 \frac{K}{mg}} \right]$ NOTE: This equation may be used when area and depth of contaminant source are known or can be estimated reliably.	S26
Mass Limit Volatilization Factor for Inhalation Exposure Route - Construction Worker, VF (m ³ /kg)	$VF_{w,r} = \frac{VF_{M-L}}{10}$	S27

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Equation for Derivation of Particulate Emission Factor, PEF - Construction Worker (m ³ /kg)	$PEF = \frac{PEF}{10}$	S16
Equations for the Migration to Groundwater Portion of the Groundwater Ingestion Exposure Route	Remediation Objective (mg/kg) $C_s = \left[K_d + \frac{(0_s + 0_w \cdot IF)}{\rho_s} \right]$ NOTE: This equation can only be used if the contaminant of concern is not in the water bearing unit. Target Soil Leachate Concentration, C_s (mg/L) $C_s = DF \cdot GW_{AO}$	S17 S18
Soil Water Partition Coefficient, K_d (cm ³ /g)	$K_d = K_{ow} \cdot f_{ow}$	S19
Water-Filled Soil Porosity, θ_w (L_{water}/L_{soil})	$\theta_w = \eta \cdot \left(\frac{f}{K_d} \right)^{1/(1+\gamma)}$	S20
Air-Filled Soil Porosity, θ_a (L_{air}/L_{soil})	$\theta_a = \eta - \theta_w$	S21
Dilution Factor, DF (unitless)	$DF = 1 + \frac{K_d \cdot i \cdot d}{l \cdot L}$	S22

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TABLE B SSL Parameters

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Table B: SSL Parameters

Symbol	Parameter	Units	Source	Parameter Value(s)
AT	Averaging Time for Noncarcinogens in Ingestion Equation	yr	SSL	Residential = 6 Industrial/Commercial = 25 Construction Worker = 0.115
AT	Averaging Time for Noncarcinogens in Inhalation Equation	yr	SSL	Residential = 30 Industrial/Commercial = 25 Construction Worker = 0.115
AT _c	Averaging Time for Carcinogens	yr	SSL	70
BW	Body Weight	kg	SSL	Residential = 15, noncarcinogens 70, carcinogens Industrial/Commercial = 70 Construction Worker = 70
C _{so}	Soil Saturation Concentration	mg/kg	Appendix A, Table A or Equation S29 in Appendix C, Table A	Chemical-Specific or Calculated Value
C _s	Target Soil Leachate Concentration	mg/L	Equation S18 in Appendix C, Table A	Groundwater Standard, Health Advisory, or Calculated Value
d	Mixing Zone Depth	m	SSL or Equation S25 in Appendix C, Table A	2 m or Calculated Value
d _a	Aquifer Thickness	m	Field Measurement	Site-Specific

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Mass-Limit Remediation Objective for Migration to Groundwater Porosity of the Groundwater Ingestion Exposure Route (mg/kg)	$\left(\frac{C_{ss} \cdot I \cdot M \cdot L \cdot ED \cdot M-L}{V_R \cdot d_s} \right)$ <p>NOTE: This equation may be used when area and depth of contaminant source are known or can be estimated reliably.</p>	S28
Equation for Derivation of the Soil Saturation Limit, C _{so}	$C_{so} = \frac{S}{\rho_s} \cdot \left[(K_s \cdot \rho_s) + \theta_s + (I/P \cdot \theta_s) \right]$	S29

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Symbol	Parameter	Units	Source	Parameter Value(s)
ED_{GL}	Exposure Duration for Migration to Groundwater Mass Limit Equation S29	yr	SSL	—
Ef	Exposure Frequency	1/yr	SSL	Residential = 350 Industrial/Commercial = 350 Construction Worker = 30
$F(x)$	Function dependent on U_0, U_1	unitless	SSL	0.194
f_1	Organic Carbon Content of Soil	g/g	SSL or Field Measurement (See Appendix C, Table F)	Surface Soil = 0.006 Subsurface soil = 0.002, or Site Specific
GW_{GL}	Groundwater Cleanup Objective	mg/L	Appendix B, Table L, 35 IAC 6.20 Subpart F, or Equation S23 in Appendix C, Table A	Chemical-Specific or Calculated
H'	Henry's Law Constant	unitless	Appendix C, Table E	Chemical-Specific
i	Hydraulic Gradient	m/m	Field Measurement (See Appendix C, Table F)	Site Specific
I	Infiltration Rate	m/yr	SSL	0.3
I_{GL}	Infiltration Rate for Migration to Groundwater Mass Limit Equation S29	m/yr	SSL	0.18

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Symbol	Parameter	Units	Source	Parameter Value(s)
d_s	Depth of Source	m	Field Measurement or Estimation	Site-Specific
D_A	Apparent Diffusivity	cm^2/s	Equation S10 in Appendix C, Table A	Calculated Value
D_a	Diffusivity in Air	cm^2/s	Appendix C, Table E	Chemical-Specific
D_w	Diffusivity in Water	cm^2/s	Appendix C, Table E	Chemical-Specific
DF	Dilution Factor	unitless	Equation S22 in Appendix C, Table A	20 or Calculated Value
ED	Exposure Duration for Ingestion of Carcinogens	yr	SSL	Industrial/Commercial = 25 Construction Worker = 1
ED	Exposure Duration for Inhalation of Carcinogens	yr	SSL	Residential = 30 Industrial/Commercial = 25 Construction Worker = 1
ED	Exposure Duration for Ingestion of Noncarcinogens	yr	SSL	Residential = 6 Industrial/Commercial = 25 Construction Worker = 1
ED	Exposure Duration for Inhalation of Noncarcinogens	yr	SSL	Residential = 30 Industrial/Commercial = 25 Construction Worker = 1
ED	Exposure Duration for the Direct Ingestion of Groundwater	yr	—	Residential = 30 Industrial/Commercial = 25 Construction Worker = 1

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Symbol	Parameter	Units	Source	Parameter Value(s)
Q/C	Inverse of the mean concentration at the center of a square source (used in VF and PEF equations)	(g/m ² -s)/(kg/m ³)	SSL or Appendix C, Table H	Residential = 68.81 Industrial/Commercial = 85.81 Construction Worker = 85.81
R/C	Inhalation Reference Concentration	mg/m ³	IEPA (IRIS/HEAST ¹)	Toxicological Specific (Note: for Construction Workers use subchronic reference concentrations)
R/D ₅₀	Oral Reference Dose	mg/(kg-d)	IEPA (IRIS/HEAST ¹)	Toxicological Specific (Note: for Construction Worker use subchronic reference doses)
S	Solubility in Water	mg/L	Appendix C, Table E	Chemical Specific
SF ₀₁	Oral Slope Factor	(mg/kg-d) ⁻¹	IEPA (IRIS/HEAST ¹)	Toxicological Specific
T	Exposure Interval	s	SSL	Residential = 9.5×10^5 Industrial/Commercial = 7.9×10^5 Construction Worker = 3.6×10^5
THQ	Target Hazard Quotient	unitless	SSL	1
TR	Target Cancer Risk	unitless	SSL	Residential = 10^{-4} to 10^{-5} Industrial/Commercial = 10^{-4} to 10^{-5} Construction Worker = 10^{-4} to 10^{-5}
U ₉₀	Mean Annual Windspeed	m/s	SSL	4.69
URF	Inhalation Unit Risk Factor	(ug/m ³) ⁻¹	IEPA (IRIS/HEAST ¹)	Toxicological Specific

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Symbol	Parameter	Units	Source	Parameter Value(s)
IF _{soil, m} (residential)	Age Adjusted Soil Ingestion Factor for Carcinogens	(mg-yr)/(kg-d)	SSL	Residential = 114
IR _{soil}	Soil Ingestion Rate	mg/d	SSL	Residential = 200 Industrial/Commercial = 50 Construction Worker = 480
IR _w	Daily Water Ingestion Rate	L/d	-----	Residential = 2 Industrial/Commercial = 1
K	Aquifer Hydraulic Conductivity	m/yr	Field Measurement (See Appendix C, Table F)	Site Specific
K _d	Soil-Water Partition Coefficient	cm ³ /g or L/kg	Equation S19 in Appendix C, Table A	Calculated Value
K _{oc}	Organic Carbon Partition Coefficient	cm ³ /g or L/kg	Appendix C, Table E	Chemical Specific
K _s	Saturated Hydraulic Conductivity	m/yr	Appendix C, Table K Appendix C, Illustration C	Site Specific
L	Source Length Parallel to Groundwater Flow	m	Field Measurement	Site Specific
PEF	Particulate Emission 10 ⁻⁴ to 10 ⁻⁵ Factor	m ³ /kg	SSL or Equation S15 in Appendix C, Table A	1.42 × 10 ⁴ or Site Specific
PEF ⁺	Particulate Emission Factor adjusted for Agitation (construction workers)	m ³ /kg	Equation S16 in Appendix C, Table A	9.53 × 10 ⁴ or Site Specific

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Symbol	Parameter	Units	Source	Parameter Value(s)
θ_a	Air-Filled Soil Porosity	L_{air}/L_{void}	SSL or Equation S21 in Appendix C, Table A	Surface Soil (top 1 meter) = 0.28 Subsurface Soil (below 1 meter) = 0.14, or Gravel = 0.05 Sand = 0.14 Silt = 0.24 Clay = 0.19, or Calculated Value
θ_w	Water-Filled Soil Porosity	L_{water}/L_{void}	SSL or Equation S20 in Appendix C, Table A	Surface Soil (top 1 meter) = 0.15 Subsurface Soil (below 1 meter) = 0.30, or Gravel = 0.20 Sand = 0.18 Silt = 0.16 Clay = 0.12, or Calculated Value
ρ_b	Dry Soil Bulk Density	kg/L	SSL or Field Measurement (See Appendix C, Table F)	1.5, or Gravel = 2.0 Sand = 1.8 Silt = 1.6 Clay = 1.7, or Site-Specific

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Symbol	Parameter	Units	Source	Parameter Value(s)
U_i	Equivalent Threshold Value of Windspeed at 7 m	m/s	SSL	11/32
V	Fraction of Vegetative Cover	unitless	SSL or Field Measurement	0.5 or Site-Specific
VF	Volatilization Factor	m ³ /kg	Equation S8 in Appendix C, Table A	Calculated Value
VF ²	Volatilization Factor adjusted for Agitation	m ³ /kg	Equation S9 in Appendix C, Table A	Calculated Value
VF _{ML}	Mass-Limit Volatilization Factor	m ³ /kg	Equation S26 in Appendix C, Table A	Calculated Value
VF _{ML}	Mass-Limit Volatilization Factor adjusted for Agitation	m ³ /kg	Equation S27 in Appendix C, Table A	Calculated Value
η	Total Soil Porosity	L_{void}/L_{void}	SSL or Equation S24 in Appendix C, Table A	0.43, or Gravel = 0.25 Sand = 0.32 Silt = 0.40 Clay = 0.36, or Calculated Value

TABLE C RBCA Equations

Section 742.Appendix C: Tier 2 Tables and Illustrations

Table C: RBCA Equations

Equations for the combined exposures routes of soil ingestion	Remediation Objectives for Carcinogenic Contaminants (mg/kg)	$IR \bullet BH \bullet AT_c \bullet 365 \frac{d}{yr}$ $EF \bullet ED \bullet \left[\left(SF_{soil} \bullet 10^{-5} \frac{kg}{mg} \bullet \left[IR_{soil} \bullet R \bullet TF_{soil} \right] + \left[S \bullet M \bullet R \bullet AF_{soil} \right] \right) \bullet \left(SF_{air} \bullet IR_{air} \bullet \left(VF_{air} + VF_{p} \right) \right) \right]$	R1
inhalation of vapors and particulates, and dermal contact with soil	Remediation Objectives for Non-carcinogenic Contaminants (mg/kg)	$\frac{10HQ \bullet BH \bullet AT_n \bullet 365 \frac{d}{yr}}{10^{-6} \frac{kg}{mg} \bullet \left[\left(IR_{soil} \bullet R \bullet TF_{soil} \right) + \left(S \bullet M \bullet R \bullet TF_{soil} \right) \right] + \frac{IR_{air} \bullet \left(VF_{air} + VF_{p} \right)}{RfD_{soil}}}$	R2
Volatilization Factor for Surface Soil, VF _{ss} (kg/m ³)	Whichever is less between R3 and R4	$VF_{ss} = \frac{2 \bullet W \bullet \rho_s \bullet (10)^{-5} \frac{cm^3}{m^3} \frac{kg}{g}}{U_{air} \bullet \delta_{air} \bullet \tau} \bullet \frac{D^{1/2} \bullet H'}{\sqrt{\pi \bullet \left[\theta_{ss} + \left(k \bullet \rho_s \right) + \left(H' \bullet \theta_{ss} \right) \right] \bullet \tau}}$	R3
		$VF_{ss} = \frac{W \bullet \rho_s \bullet (10)^{-5} \frac{cm^3}{m^3} \frac{kg}{g}}{U_{air} \bullet \delta_{air} \bullet \tau}$	R4

Symbol	Parameter	Units	Source	Parameter Value(s)
ρ_s	Soil Particle Density	g/cm ³	SSL or Field Measurement (See Appendix C, Table F)	2.65, or Surface Soil (top 1 meter) = 2.63 Subsurface Soil (below 1 meter) = 2.65, or Site-Specific
ρ_w	Water Density	g/cm ³	SSL	1
$1/(2b+3)$	Exponential in Equation S20	unitless	Appendix C, Table K Appendix C, Illustration	Site-Specific

^a REAST = Health Effects Assessment Summary Tables. USEPA, Office of Solid Waste and Emergency Response. EPA 560/R-95/016. Updated Quarterly.

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Carcinogenic Risk-Based Screening Level for Air, $RBSL_{car}$ ($\mu\text{g}/\text{m}^3$)	$RBSL_{car} = \frac{TR \bullet BW \bullet AT_c \bullet 365 \frac{d}{yr} \bullet 10^3 \frac{\mu\text{g}}{\text{kg}}}{SF \bullet IR_{air} \bullet EF \bullet ED}$	R9
Noncarcinogenic Risk-Based Screening Level for Air, $RBSL_{nc}$ ($\mu\text{g}/\text{m}^3$)	$RBSL_{nc} = \frac{THQ \bullet RfD \bullet BW \bullet 365 \frac{d}{yr} \bullet 10^3 \frac{\mu\text{g}}{\text{kg}}}{IR_{air} \bullet EF \bullet ED}$	R10
Volatilization Factor - Subsurface Soil vs Ambient Air, VF_{amb} (mg/m^3)/($\text{mg}/\text{kg}_{soil}$)	$VF_{amb} = \frac{H' \bullet \rho_s \bullet 10^3 \frac{\text{cm}^3}{\text{m}^3} \frac{\text{kg}}{\text{g}}}{[0_{air} + (k \bullet \rho_s) + (H' \bullet 0_{air})] \left[1 + \frac{(U_{air} \bullet \delta_{air} \bullet L_s)}{(D_v^{eff} \bullet H')} \right]}$	R11

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	Volatilization Factor for Surficial Soils Regarding Particulates, VF_p (kg/m^3)	$VF_p = \frac{P_s \bullet H' \bullet 10^3 \frac{\text{cm}^3}{\text{m}^3} \frac{\text{kg}}{\text{g}}}{U_{air} \bullet \delta_{air}}$	R5
	Effective Diffusion Coefficient in Soil Based on Vapor Phase Concentration D_v^{eff} (cm^2/s)	$D_v^{eff} = \frac{D_v^{por} \bullet 0_{air}^{1/3}}{0_i} + \frac{D_v^{nonpor} \bullet 0_{air}^{1/3}}{IF \bullet 0_i}$	R6
Equations for the ambient vapor substation (outdoor)	Remediation Objectives for Carcinogenic Contaminants (mg/kg)	$\frac{RBSL_{car} \bullet 10^{-3}}{VF_{amb}}$	R7
route from subsurface soils	Remediation Objectives for Non carcinogenic Contaminants (mg/kg)	$\frac{RBSL_{nc} \bullet 10^{-3}}{VF_{amb}}$	R8

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Transverse Dispersion, α_x (cm)	$\alpha_x = \frac{\alpha_1}{3}$	R17
Vertical Dispersion, α_z (cm)	$\alpha_z = \frac{\alpha_1}{20}$	R18
Specific Discharge, U (cm/d)	$U = \frac{K \cdot I}{\theta_s}$	R19
Soil-Water Sorption Coefficient, k_d	$k_d = K_{oc} \cdot f_{oc}$	R20
Volumetric Air Content in Vadose Zone Soils, θ_{va} (cm ³ /cm ³ _{soil})	$\theta_{va} = \theta_s + \frac{(w \cdot \rho_s)}{\rho_w}$	R21
Volumetric Water Content in Vadose Zone Soils, θ_{ws} (cm ³ _{water} /cm ³ _{soil})	$\theta_{ws} = \frac{w \cdot \rho_s}{\rho_w}$	R22
Total Soil Porosity, θ_t (cm ³ /cm ³ _{soil})	$\theta_t = \theta_{va} + \theta_{ws}$	R23

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Equations for the Migration to Groundwater Portion of the Groundwater	Remediation Objective (mg/kg)	$\frac{GW_{conc}}{LF_{ex}}$	R12
Ingestion Exposure Route	Groundwater at the source, GW_{source} (mg/L)	Note: This equation can only be used if the contaminant of concern is not in the water bearing unit	
		$GW_{source} = \frac{GW_{conc}}{C_{(x)}} \cdot C_{concentr}$	R13
Leaching Factor, LF_{ex} (mg/L _{water})/(mg/kg _{soil})		$LF_{ex} = \frac{cm^3 \cdot kg}{L \cdot R} \cdot \frac{1}{\left[\theta_{va} + (k_d \cdot \rho_s) + (H \cdot \theta_{ws}) \right] \cdot \left[1 + \frac{(U_{ex} \cdot \theta_{ws})}{(I \cdot H)} \right] \cdot 365 \frac{d}{yr}}$	R14
Steady-State Attenuation Along the Centerline of a Dissolved Plume, $C_{(x)}/C_{concentr}$		$C_{(x)}/C_{concentr} = \exp \left[\left(\frac{1}{2\alpha_x} \right) \cdot \left(1 - \sqrt{1 - \frac{4K \cdot \alpha_x}{U}} \right) \cdot x \right] \cdot \exp \left[\left(\frac{S_y}{4 \cdot \alpha_x \cdot \rho_s \cdot \lambda} \right) \cdot x \right] \cdot \exp \left[\left(\frac{S_y}{4 \cdot \alpha_x \cdot \rho_s \cdot \lambda} \right) \cdot x \right]$	R15
Longitudinal Dispersion, α_L (cm)		$\alpha_L = 0.10 \cdot X$	R16

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TABLE D RBCA Parameters

Section 742.APPENDIX C: Tier 2 Tables and Illustrations

Table D: RBCA Parameters

Symbol	Parameter	Units	Source	Parameter Value(s)
AT_c	Averaging Time for Carcinogens	yr	RBCA	70
AT_n	Averaging Time for Noncarcinogens	yr	RBCA	Residential = 30 Industrial/Commercial = 25 Construction Worker = 0.115
BW	Adult Body Weight	kg	RBCA	70
C_{source}	Concentration of Contaminant in Groundwater at the Source.	mg/L	Field Measurement	Site-Specific
C_{10}	Concentration of Contaminant in Groundwater at Distance X from the source	mg/L	Equation R26 in Appendix C, Table C	Calculated Value
C_{10}/C_{source}	Steady-State Attenuation Along the Centerline of a Dissolved Plume	unitless	Equation R15 in Appendix C, Table C	Calculated Value
d	Lower Depth of Surficial Soil Zone	cm	Field Measurement	100 or Site-Specific (not to exceed 100)

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	Groundwater Darcy Velocity, U_{gw} (cm/s)	$U_{gw} = K \cdot i$	R24
Equations for the Groundwater Ingestion Exposure Route	Remediation Objective for Carcinogenic Contaminants (mg/L)	$TR = BW \cdot AT_c \cdot 365 \frac{d}{yr}$ $\frac{NF_{10} \cdot IR_c \cdot EF \cdot ED}{yr}$	R25
	Dissolved Hydrocarbon Concentration along Centerline, C_{10} (g/cm ³ _{water})	$C_{(x)} =$ $C_{source} \cdot exp \left[\left(\frac{-\lambda}{2u_{10}} \right) \cdot \left(1 - \sqrt{1 - \frac{4\lambda \cdot u_{10}}{l}} \right) \right] \cdot erf \left[\frac{S_{w10}}{4 \cdot \sqrt{u_{10}} \cdot l} \right] \cdot erf \left[\frac{S_d}{4 \cdot \sqrt{u_{10}} \cdot l} \right]$ <p>NOTE:</p> <ol style="list-style-type: none">1. This equation does not predict the contaminant flow within bedrock.2. If this value of the First Order Degradation Constant (λ) is not readily available, then set $1 - \sqrt{1 - 4\lambda \cdot u_{10}} \cdot \alpha_x$ to equal a value of "1"	R26

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Symbol	Parameter	Units	Source	Parameter Value(s)
GW_{conc}	Groundwater Concentration at the Source	mg/L	Equation R13 in Appendix C, Table C	Calculated Value
H'	Henry's Law Constant	cm^3_{atm}/cm^3_{liq}	Appendix C, Table E	Chemical-Specific
i	Hydraulic Gradient	cm/cm (unitless)	Field Measurement (See Appendix C, Table F)	Site-Specific
I	Infiltration Rate	cm/yr	RBCA	30
IR_{out}	Daily Outdoor Inhalation Rate	m^3/d	RBCA	20
IR_{ind}	Soil Ingestion Rate	mg/d	RBCA	Residential = 100 Industrial/Commercial = 50 Construction Worker = 400
IR_{in}	Daily Water Ingestion Rate	L/d	RBCA	Residential = 2 Industrial/Commercial = 1
K	Aquifer Hydraulic Conductivity	cm/d	Field Measurement (See Appendix C, Table F)	Site-Specific
K_{ow}	Organic Carbon Partition Coefficient	cm^3/g or L/kg	Appendix C, Table E	Chemical-Specific
k_s	Soil Water Sorption Coefficient	$(cm^3_{water}/cm^3_{soil})$	Equation R20 in Appendix C, Table C	Calculated Value
L_s	Depth to Subsurface Soil Sources	cm	RBCA	10

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Symbol	Parameter	Units	Source	Parameter Value(s)
D^{air}	Diffusion Coefficient in Air	cm^2/s	Appendix C, Table E	Chemical-Specific
D^{water}	Diffusion Coefficient in Water	cm^2/s	Appendix C, Table E	Chemical-Specific
D^{eff}	Effective Diffusion Coefficient in Soil Based on Vapor Phase Concentration	cm^2/s	Equation R6 in Appendix C, Table C	Calculated Value
ED	Exposure Duration	yr	RBCA	Residential = 30 Industrial/Commercial = 25 Construction Worker = 1
EF	Exposure Frequency	d/yr	RBCA	Residential = 350 Industrial/Commercial = 250 Construction Worker = 30
erf	Error Function	unitless	Appendix C, Table G	Mathematical Function
f_{oc}	Organic Carbon Content of Soil	g/g	RBCA or Field Measurement (See Appendix C, Table F)	Surface Soil = 0.006 Subsurface Soil = 0.002 or Site-Specific
GW_{comp}	Groundwater Objective at the Compliance Point	mg/L	Appendix B, Table E, 35 IAC 620 Subpart F, or Equation R25 in Appendix C, Table C	Site-Specific

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Symbol	Parameter	Units	Source	Parameter Value(s)
LF _{so}	Leaching Factor	(mg/L _{soil}) ^{1/2} (mg/kg _{soil})	Equation R14 in Appendix C, Table C	Calculated Value
M	Soil to Skin Adherence Factor	mg/cm ²	RBCA	0.5
Pe	Particulate Emission Rate	g/cm ² -s	RBCA	6.9 × 10 ⁻¹⁴
RAF _d	Dermal Relative Absorption Factor	unitless	RBCA	0.5
RAF _d (PNAs)	Dermal Relative Absorption Factor	unitless	RBCA	0.05
RAF _d (inorganics)	Dermal Relative Absorption Factor	unitless	RBCA	0
RAF _o	Oral Relative Absorption Factor	unitless	RBCA	1.0
RBSL _{car}	Carcinogenic Risk Based Screening Level for Air	ug/m ³	Equation R9 in Appendix C, Table C	Chemical-, Media-, and Exposure Route-Specific
RBSL _{nc}	Noncarcinogenic Risk Based Screening Level for Air	ug/m ³	Equation R10 in Appendix C, Table C	Chemical-, Media-, and Exposure Route-Specific
RID _i	Inhalation Reference Dose	mg/kg-d	IEPA (IRIS/HEAST ¹)	Toxicological-Specific

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Symbol	Parameter	Units	Source	Parameter Value(s)
RID _o	Oral Reference Dose	mg/(kg-d)	IEPA (IRIS/HEAST ¹)	Toxicological Specific. (Note: for Construction Worker use subchronic reference doses)
SA	Skin Surface Area	cm ² /d	RBCA	3,160
S _v	Source Width Perpendicular to Groundwater Flow Direction in Vertical Plane	cm	Field Measurement	For Migration to Groundwater Route Use: 200 or Site-Specific. For Groundwater Cleanup objective Use: Site-Specific.
S _h	Source Width Perpendicular to Groundwater Flow Direction in Horizontal Plane	cm	Field Measurement	Site-Specific
SF _i	Inhalation Cancer Slope Factor	(mg/kg-d) ⁻¹	IEPA (IRIS/HEAST ¹)	Toxicological-Specific
SF _o	Oral Slope Factor	(mg/kg-d) ⁻¹	IEPA (IRIS/HEAST ¹)	Toxicological-Specific
THQ	Target Hazard Quotient	unitless	RBCA	1
TR	Target Cancer Risk	unitless	RBCA	Residential = 10 ⁻⁶ to 10 ⁻⁸ Industrial/Commercial = 10 ⁻⁶ to 10 ⁻⁸ Construction Worker = 10 ⁻⁵ to 10 ⁻⁶

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Symbol	Parameter	Units	Source	Parameter Value(s)
U	Specific Discharge	cm/d	Equation R19 in Appendix C, Table C	Calculated Value
U_{ax}	Average Wind Speed Above Ground Surface in Ambient Mixing Zone	cm/s	RBC A	225
U_{gw}	Groundwater Darcy Velocity	cm/yr	Equation R24 in Appendix C, Table C	Calculated Value
VF_p	Volatilization Factor for Surface Soils Regarding Particulates	kg/m ³	Equation R5 in Appendix C, Table C	Calculated Value
VF_{soil}	Volatilization Factor (Subsurface Soils to Ambient Air)	(mg/m ³)/(mg/kg ρ_{soil}) or kg/m ³	Equation R11 in Appendix C, Table C	Calculated Value
VF_a	Volatilization Factor for Surface Soils	kg/m ³	Use Equations R3 and R4 in Appendix C, Table C	Calculated Value from Equation R3 or R4 (whichever is less)
W	Width of Source Area Parallel to Direction of Wind or Groundwater Movement	cm	Field Measurement	Site-Specific

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Symbol	Parameter	Units	Source	Parameter Value(s)
w	Average Soil Moisture Content	R_{soil}/R_{sat}	RBC A or Field Measurement (See Appendix C, Table F)	0.1, or Surface Soil (top 1 meter) = 0.1 Subsurface Soil (below 1 meter) = 0.2, or Site-Specific
X	Distance along the Centerline of the Groundwater Plume Emanating from a Source The x direction is the direction of groundwater flow	cm	Field Measurement	Site-Specific
α_L	Longitudinal Dispersivity	cm	Equation R16 in Appendix C, Table C	Calculated Value
α_T	Transverse Dispersivity	cm	Equation R17 in Appendix C, Table C	Calculated Value
α_V	Vertical Dispersivity	cm	Equation R18 in Appendix C, Table C	Calculated Value
δ_{ax}	Ambient Air Mixing Zone Height	cm	RBC A	200
δ_{gw}	Groundwater Mixing Zone Thickness	cm	RBC A	200

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Symbol	Parameter	Units	Source	Parameter Value(s)
θ_r	Total Soil Porosity	$\text{cm}^3/\text{cm}^3_{\text{soil}}$	RBCA or Equation R23 in Appendix C, Table C	0.43, or Gravel = 0.25 Sand = 0.32 Silt = 0.40 Clay = 0.36, or Calculated Value
λ	First Order Degradation Constant	d^{-1}	Appendix C, Table E	Chemical Specific
n	n			3.1416
ρ_b	Soil Bulk Density	g/cm^3	RBCA or Field Measurement (See Appendix C, Table F)	1.5, or Gravel = 2.0 Sand = 1.8 Silt = 1.6 Clay = 1.7, or Site Specific
ρ_w	Water Density	g/cm^3	RBCA	1
t	Averaging Time for Vapor Flux	s	RBCA	9.46×10^5

* HEAST = Health Effects Assessment Summary Tables. USEPA, Office of Solid Waste and Emergency Response. EPA/540/R-95/036. Updated Quarterly

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Symbol	Parameter	Units	Source	Parameter Value(s)
θ_{va}	Volumetric Air Content in Vadose Zone Soils	$\text{cm}^3_{\text{air}}/\text{cm}^3_{\text{soil}}$	RBCA or Equation R21 in Appendix C, Table C	Surface Soil (top 1 meter) = 0.28 Subsurface Soil (below 1 meter) = 0.13, or Gravel = 0.05 Sand = 0.14 Silt = 0.16 Clay = 0.17, or Calculated Value
θ_{wa}	Volumetric Water Content in Vadose Zone Soils	$\text{cm}^3_{\text{water}}/\text{cm}^3_{\text{soil}}$	RBCA or Equation R22 in Appendix C, Table C	Surface Soil (top 1 meter) = 0.15 Subsurface Soil (below 1 meter) = 0.10, or Gravel = 0.20 Sand = 0.18 Silt = 0.16 Clay = 0.17, or Calculated Value

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CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (D _A) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K _{oc}) (L/kg)	First Order Degradation Constant (k _d) (d ⁻¹)
56-55-3	Benz(a)anthracene	0.0094	0.0510	9.00E-6	0.000137	398,000	0.00051
205-99-2	Benz(b)fluoranthene	0.0015	0.0226	5.56E-6	0.00455	1,230,000	0.00057
207-08-9	Benz(k)fluoranthene	0.0008	0.0226	5.56E-6	0.000034	1,230,000	0.00016
65-85-0	Benzoic Acid	3,300	0.0536	7.97E-6	0.0000631	0.600	No Data
50-32-8	Benz(a)pyrene	0.00162	0.043	9.00E-6	0.0000463	1,020,000	0.00005
111-44-4	Bis(2-chloroethyl)ether	17,200	0.0692	7.53E-6	0.000798	15.5	0.0019
117-81-7	Bis(2-ethylhexyl)phthalate	0.34	0.0351	3.66E-6	0.00000418	15,100,000	0.0018
75-27-4	Bromodichloromethane	6,740	0.0298	1.06E-5	0.0656	55.0	No Data
75-25-2	Bromoform	3,100	0.0149	1.03E-5	0.0219	87.1	0.0019
71-36-3	Butanol	74,000	0.0800	9.30E-6	0.000061	6.92	0.01283
85-68-7	Butyl Benzyl Phthalate	2.69	0.0174	4.83E-6	0.0000517	57,500	0.00085
86-74-8	Carbazole	7.48	0.0390	7.03E-6	0.000000626	3,390	No Data

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TABLE B Default Physical and Chemical Parameters

Section 742.APPENDIX C: Tier 2 Tables and Illustrations

Table E: Default Physical and Chemical Parameters

CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (D _A) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K _{oc}) (L/kg)	First Order Degradation Constant (k _d) (d ⁻¹)
Neutral Organics							
83-32-9	Acetophenone	4.24	0.0421	7.69E-6	0.00636	7,080	0.0034
67-64-1	Acetone	1,000,000	0.124	1.14E-5	0.00159	0.575	0.0493
15972-60-8	Alachlor	242	0.0198	5.69E-6	0.00000132	194	No Data
116-06-3	Aldicarb	6,000	0.0305	7.19E-6	0.000000574	12	0.00109
309-00-2	Aldrin	0.18	0.0132	4.86E-6	0.00697	2,450,000	0.00059
120-12-7	Ambacene	0.0434	0.0324	7.74E-6	0.00267	29,500	0.00075
1912-24-9	Atrazine	70	0.0258	6.69E-6	0.00000005	451	No Data
71-43-2	Benzene	1,750	0.080	9.80E-6	0.228	58.9	0.0009

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CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (D _a) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K _{ow}) (L/kg)	First Order Degradation Constant (k _d) (d ⁻¹)
72-55-9	4,4'-DDE	0.12	0.0144	5.87E-6	0.000861	4,470,000	0.00062
50-29-3	4,4'-DDT	0.025	0.0137	4.95E-6	0.000332	2,630,000	0.00062
75-99-0	Dieldrin	900,000	0.0414	9.44E-6	0.0000264	5.8	0.005775
53-70-3	Dibenz(a,h)anthracene	0.00249	0.0202	5.18E-6	0.00000803	3,800,000	0.00017
96-12-8	1,2-Dibromo-3-chloropropane	1,200	0.0212	7.02E-6	0.00615	182	0.001925
106-93-4	1,2-Dichloroethane	4,200	0.0287	8.08E-6	0.0303	93	0.005775
84-74-2	Di-n-butyl Phthalate	11.2	0.0438	7.84E-6	0.000000385	31,900	0.03013
95-50-1	1,2-Dichlorobenzene	156	0.0690	7.90E-6	0.0779	617	0.0019
106-46-7	1,4-Dichlorobenzene	73.8	0.0690	7.90E-6	0.0996	617	0.0019
91-94-1	3,3'-Dichlorobenzidine	3.11	0.0194	6.74E-6	0.00000164	724	0.0019

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CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (D _a) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K _{ow}) (L/kg)	First Order Degradation Constant (k _d) (d ⁻¹)
1363-66-2	Carbofuran	320	0.0249	6.63E-6	0.0377	37	No Data
75-15-0	Carbon Disulfide	1,190	0.104	1.00E-5	1.24	45.7	No Data
56-23-5	Carbon Tetrachloride	793	0.0780	8.40E-6	1.25	174	0.0019
57-74-9	Chlordane	0.056	0.0118	3.37E-6	0.00199	120,000	0.00025
106-47-8	p-Chloroaniline	5,300	0.0483	1.01E-5	0.000136	66.1	No Data
108-09-7	Chlorobenzene	472	0.0730	8.70E-6	0.152	219	0.0023
124-48-1	Chlorodibromomethane	2,600	0.0196	1.05E-5	0.0321	63.1	0.00385
67-66-3	Chloroform	7,920	0.104	1.00E-5	0.15	39.8	0.00039
95-57-8	2-Chlorophenol	22,000	0.0501	9.46E-6	0.016	388	No Data
218-01-9	Chrysene	0.0016	0.0208	6.21E-6	0.00388	396,000	0.00035
94-75-7	2,4-D	680	0.0231	7.31E-6	0.00000041	451	0.00385
72-54-8	4,4'-DDD	0.09	0.0169	4.76E-6	0.000164	1,000,000	0.00062

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CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (D _a) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K _{oc}) (L/kg)	First Order Degradation Constant (λ) (d ⁻¹)
121-14-2	2,4-Dinitrofluorene	270	0.203	7.0E-6	0.000038	95.5	0.00192
606-20-2	2,6-Dinitrofluorene	182	0.0327	7.26E-6	0.000036	69.2	0.00192
88-85-7	Dinitroch	52	0.0215	6.62E-6	0.0000189	1,120	0.001817
117-84-0	Dinitro-2-ethyl Phthalate	0.02	0.0151	3.58E-6	0.00274	83,200,000	0.0019
115-29-7	Endosulfan	0.31	0.0115	4.55E-6	0.000459	2,140	0.07629
145-73-3	Endosulfan	21,000	0.0291	8.07E-6	0.000000107	0.29	No Data
72-20-8	Endrin	0.25	0.0125	4.74E-6	0.000308	12,300	0.00332
100-41-4	Edithene	169	0.0750	7.80E-6	0.323	363	0.003
206-44-0	Fluoranthene	0.206	0.0302	6.35E-6	0.0006	107,000	0.00019
86-73-7	Fluorene	1.98	0.0363	7.88E-6	0.00261	13,800	0.00091
76-44-8	Heptachlor	0.18	0.0112	5.69E-6	0.024	1,410,000	0.13
1024-57-3	Heptachlor epoxide	0.2	0.0132	4.23E-6	0.00039	83,200	0.00063

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CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (D _a) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K _{oc}) (L/kg)	First Order Degradation Constant (λ) (d ⁻¹)
75-34-3	1,1-Dichloroethane	5,060	0.0742	1.05E-5	0.23	31.6	0.0019
107-06-2	1,2-Dichloroethane	8,520	0.104	9.90E-6	0.0401	17.4	0.0019
75-35-4	1,1-Dichloroethylene	2,250	0.0900	1.04E-5	1.07	58.9	0.0053
156-59-2	cis-1,2-Dichloroethylene	3,500	0.0736	1.13E-5	0.167	35.5	0.00024
156-60-5	trans-1,2-Dichloroethylene	6,300	0.0707	1.14E-5	0.385	32.5	0.00024
120-83-2	2,4-Dichlorophenol	4,500	0.0346	8.77E-6	0.00013	147	0.00027
78-87-5	1,2-Dichloropropane	2,800	0.0782	8.73E-6	0.115	43.7	0.00027
542-75-6	1,3-Dichloropropylene (cis + trans)	2,800	0.0626	1.04E-5	0.726	45.7	0.061
60-57-1	Dieldrin	0.195	0.0125	4.74E-6	0.000619	21,400	0.00032
84-66-2	Diethyl Phthalate	1,080	0.0256	6.35E-6	0.0000185	288	0.00019
105-67-9	2,4-Dinitrophenol	7,870	0.0584	8.69E-6	0.000002	209	0.0495
51-28-5	2,4-Dinitrophenol	2,790	0.0273	9.06E-6	0.0000102	0.01	0.00132

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CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (D _a) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K _{oc}) (L/kg)	First Order Degradation Constant (λ) (d ⁻¹)
95-47-6	o-Xylene	178	0.087	1.00E-5	0.213	361	0.0019
106-42-3	p-Xylene	185	0.0769	8.44E-6	0.314	349	0.0019
1330-20-7	Xylenes (total)	186	0.0720		0.25	260	0.0019

Chemical Abstracts Service (CAS) registry number. This number in the format xxx-xx-x, is unique for each chemical and allows efficient searching on computerized data bases.

*Soil Remediation objectives are determined pursuant to 40 CFR 761.120, as incorporated by reference in Section 732.104 (the USEPA "PCB Spill Cleanup Policy"), for most sites, persons remediating sites should consult with BOLL if calculation of Tier 2 soil remediation objectives is desired.

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CAS No.	Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (D _a) (cm ² /s)	Diffusivity in Water (D _w) (cm ² /s)	Dimensionless Henry's Law Constant (H') (25°C)	Organic Carbon Partition Coefficient (K _{oc}) (L/kg)	First Order Degradation Constant (λ) (d ⁻¹)
127-18-4	Tetrachloroethylene	200	0.0720	8.20E-6	0.754	155	0.00590
108-88-3	Toluene	526	0.10870	8.60E-6	0.272	182	0.011
8001-35-2	Tosaphene	0.74	0.0116	4.34E-6	0.000246	257,000	No Data
120-82-1	1,2,4-Trichlorobenzene	300	0.0300	8.23E-6	0.0582	1,780	0.0019
71-55-6	1,1,1-Trichloroethane	1,330	0.0780	8.80E-6	0.705	110	0.0013
79-00-5	1,1,2-Trichloroethane	4,420	0.0780	8.80E-6	0.0374	50.1	0.00095
79-01-6	Trichlorobenzene	1,100	0.0790	9.10E-6	0.422	166	0.00342
95-95-4	2,4,5-Trichlorophenol	1,200	0.0291	7.03E-6	0.000178	1,800	0.00038
88-06-2	2,4,6-Trichlorophenol	840	0.0318	6.25E-6	0.000319	381	0.00038
108-05-4	Vinyl Acetate	20,000	0.0850	9.20E-6	0.021	5.25	No Data
57-01-4	Vinyl Chloride	2,760	0.106	1.23E-6	1.11	18.6	0.00024
108-38-3	m-Xylene	161	0.070	7.80E-6	0.304	407	0.0019

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TABLE F Methods for Determining Physical Soil Parameters

Table F: Methods for Determining Physical Soil Parameters

Methods for Determining Physical Soil Parameters		
Parameter	Sampling Location ^a	Method
ρ _s (soil bulk density)	Surface	ASTM - D 1556-90 Sand Cone Method ^b
		ASTM - D 2167-84 Rubber Balloon Method ^c
		ASTM - D 2922-91 Nuclear Method ^d
		ASTM - D 2917-94 Drive Cylinder Method ^d
ρ _m (soil particle density)	Surface or Subsurface	ASTM - D 854-92 Specific Gravity of Soil ^b
w (moisture content)	Surface or Subsurface	ASTM - D 4959-89 (Reapproved 1994) Liquid Limit Microwave Oven ^e
		ASTM - D 6413-93 Microwave Oven ^e
		ASTM - D2116-92 Laboratory Determination ^b
		ASTM - D3017-86 (Reapproved 1991) Nuclear Method ^d
		Equivalent (SEPA Method (e.g., Nuclear Method) or other methods described in methods 3541, or 3550)
f _o (organic carbon content)	Surface or Subsurface	Nelson and Sommers (1992) ASTM - D 2974-87 (Reapproved 1991) Mossburn, Ash, and Organic Matter ^f USEPA Method 8400A Total Organic Content

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Table F: Methods for Determining Physical Soil Parameters

Parameter	Sampling Location ^a	Method
η or θ _v (soil soil porosity)	Surface or Subsurface (calculated)	$\eta = 1 - \rho_b / \rho_s$ $\theta_v = \eta \cdot w \cdot \rho_w$
θ _s or θ _a (air-filled soil porosity)	Surface or Subsurface (calculated)	$\eta - [(w \cdot \rho_b) / (\rho_s - 1)]$
θ _u or θ _u (water-filled soil porosity)	Surface or Subsurface (calculated)	$(w \cdot \rho_b) / \rho_w$
K (hydraulic conductivity)	Surface or Subsurface	ASTM - D 5084-90 Falling Head Permeameter Pump Test
l (hydraulic gradient)	Surface or Subsurface	Slug Test Field Measurement

^a This is the location where the sample is collected^b As incorporated by reference in Section 741.120

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TABLE G Error Function (erf)

β	$\text{erf}(\beta)$
0	0
0.05	0.056372
0.1	0.112463
0.15	0.167946
0.2	0.222703
0.25	0.276326
0.3	0.328627
0.35	0.379382
0.4	0.428392
0.45	0.475442
0.5	0.520506
0.55	0.563323
0.6	0.603856
0.65	0.642024
0.7	0.677801
0.75	0.711156
0.8	0.742101
0.85	0.770668
0.9	0.796808
0.95	0.820841

$$\text{erf}(\beta) = \frac{2}{\sqrt{\pi}} \int_0^{\beta} e^{-t^2} dt$$

1.0	0.842701
1.1	0.880205
1.2	0.910314
1.3	0.934008
1.4	0.952285
1.5	0.966105
1.6	0.976348
1.7	0.983790
1.8	0.989091
1.9	0.992790
2.0	0.995322
2.1	0.997021
2.2	0.998137
2.3	0.998857
2.4	0.999311
2.5	0.999593
2.6	0.999764
2.7	0.999866
2.8	0.999925
2.9	0.999959
3.0	0.999978

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TABLE H Q/C Values By Source Area

Source (Acres)	Area Q/C Value (g/m(2)-s per kg/m(3))
0.5	97.78
1	85.81
2	76.08
5	65.75
10	59.16
30	50.60

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pH	Benzoic Acid	2-Chloro-phenol	2,4-Dichloro-phenol	2,4-Dinitro-phenol	Pentachloro-phenol	2,3,4,5-Tetra-chlorophenol	2,3,4,6-Tetra-chlorophenol	2,4,5-Trichloro-phenol	2,4,6-Trichloro-phenol
6.4	6.89E-01	3.94E+02	1.54E+02	1.06E-02	8.77E+02	8.48E+03	5.42E+02	1.99E+03	5.89E+02
6.5	6.51E-01	3.93E+02	1.53E+02	1.05E-02	7.81E+02	7.47E+03	4.55E+02	1.91E+03	5.33E+02
6.6	6.20E-01	3.92E+02	1.52E+02	1.04E-02	7.03E+02	6.49E+03	3.84E+02	1.82E+03	4.80E+02
6.7	5.95E-01	3.90E+02	1.50E+02	1.03E-02	6.40E+02	5.58E+03	3.27E+02	1.71E+03	4.29E+02
6.8	5.76E-01	3.88E+02	1.47E+02	1.02E-02	5.92E+02	4.74E+03	2.80E+02	1.60E+03	3.81E+02
6.9	5.60E-01	3.86E+02	1.45E+02	1.02E-02	5.52E+02	3.99E+03	2.42E+02	1.47E+03	3.38E+02
7.0	5.47E-01	3.83E+02	1.41E+02	1.02E-02	5.21E+02	3.33E+03	2.13E+02	1.34E+03	3.00E+02
7.1	5.38E-01	3.79E+02	1.38E+02	1.02E-02	4.96E+02	2.76E+03	1.88E+02	1.21E+03	2.67E+02
7.2	5.32E-01	3.75E+02	1.34E+02	1.01E-02	4.76E+02	2.28E+03	1.69E+02	1.07E+03	2.39E+02
7.3	5.25E-01	3.69E+02	1.28E+02	1.01E-02	4.61E+02	1.87E+03	1.53E+02	9.43E+02	2.15E+02
7.4	5.19E-01	3.62E+02	1.21E+02	1.01E-02	4.47E+02	1.53E+03	1.41E+02	8.19E+02	1.95E+02
7.5	5.16E-01	3.54E+02	1.14E+02	1.01E-02	4.37E+02	1.25E+03	1.31E+02	7.03E+02	1.78E+02
7.6	5.13E-01	3.44E+02	1.07E+02	1.01E-02	4.29E+02	1.02E+03	1.23E+02	5.99E+02	1.64E+02
7.7	5.09E-01	3.33E+02	9.84E+01	1.00E-02	4.23E+02	8.31E+02	1.17E+02	5.07E+02	1.53E+02
7.8	5.06E-01	3.19E+02	8.97E+01	1.00E-02	4.18E+02	6.79E+02	1.13E+02	4.26E+02	1.44E+02
7.9	5.04E-01	3.04E+02	8.07E+01	1.00E-02	4.14E+02	5.56E+02	1.08E+02	3.57E+02	1.37E+02
8.0	5.04E-01	2.86E+02	7.17E+01	1.00E-02	4.10E+02	4.58E+02	1.05E+02	2.98E+02	1.31E+02

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TABLE I Values to be Substituted for k[is] when Evaluating Ionizing Organics as a Function of pH

Section 742.APPENDIX C: Tier 2 Tables and Illustrations

TABLE I: Values to be Substituted for k, when Evaluating Ionizing Organics as a Function of pH

pH	Benzoic Acid	2-Chloro-phenol	2,4-Dichloro-phenol	2,4-Dinitro-phenol	Pentachloro-phenol	2,3,4,5-Tetra-chlorophenol	2,3,4,6-Tetra-chlorophenol	2,4,5-Trichloro-phenol	2,4,6-Trichloro-phenol
4.9	5.54E+00	3.98E+02	1.59E+02	2.94E-02	9.05E+03	1.73E+04	4.45E+03	2.37E+03	1.04E+03
5.0	4.64E+00	3.98E+02	1.59E+02	2.55E-02	7.96E+03	1.72E+04	4.15E+03	2.36E+03	1.03E+03
5.1	3.88E+00	3.98E+02	1.59E+02	2.23E-02	6.83E+03	1.70E+04	3.83E+03	2.36E+03	1.02E+03
5.2	3.25E+00	3.98E+02	1.59E+02	1.94E-02	5.97E+03	1.67E+04	3.49E+03	2.35E+03	1.01E+03
5.3	2.72E+00	3.98E+02	1.59E+02	1.78E-02	5.10E+03	1.65E+04	3.14E+03	2.34E+03	9.99E+02
5.4	2.29E+00	3.98E+02	1.58E+02	1.62E-02	4.32E+03	1.61E+04	2.79E+03	2.33E+03	9.82E+02
5.5	1.94E+00	3.97E+02	1.58E+02	1.50E-02	3.65E+03	1.57E+04	2.45E+03	2.32E+03	9.62E+02
5.6	1.65E+00	3.97E+02	1.58E+02	1.40E-02	3.07E+03	1.52E+04	2.13E+03	2.31E+03	9.38E+02
5.7	1.42E+00	3.97E+02	1.58E+02	1.32E-02	2.58E+03	1.47E+04	1.83E+03	2.29E+03	9.10E+02
5.8	1.24E+00	3.97E+02	1.58E+02	1.25E-02	2.18E+03	1.40E+04	1.56E+03	2.27E+03	8.77E+02
5.9	1.09E+00	3.97E+02	1.57E+02	1.20E-02	1.84E+03	1.32E+04	1.32E+03	2.24E+03	8.39E+02
6.0	9.69E-01	3.96E+02	1.57E+02	1.14E-02	1.56E+03	1.24E+04	1.11E+03	2.21E+03	7.96E+02
6.1	8.75E-01	3.96E+02	1.57E+02	1.13E-02	1.33E+03	1.15E+04	9.27E+02	2.17E+03	7.48E+02
6.2	7.99E-01	3.96E+02	1.56E+02	1.10E-02	1.15E+03	1.05E+04	7.75E+02	2.12E+03	6.97E+02
6.3	7.36E-01	3.95E+02	1.55E+02	1.08E-02	9.98E+02	9.51E+03	6.47E+02	2.06E+03	6.44E+02

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pH	As	Ba	Be	Cd	Cr (+3)	Cr (+6)	Hg	Ni	Ag	Se	Ti	Zn
6.7	2.9E+01	4.0E+01	5.5E+02	6.4E+01	1.5E+06	1.9E+01	4.0E+01	5.8E+01	6.6E+00	5.3E+00	6.9E+01	5.8E+01
6.8	2.9E+01	4.1E+01	7.9E+02	7.5E+01	1.8E+06	1.9E+01	5.2E+01	6.5E+01	8.3E+00	5.0E+00	7.1E+01	6.7E+01
6.9	2.9E+01	4.2E+01	1.1E+03	9.1E+01	2.1E+06	1.8E+01	6.6E+01	7.4E+01	1.0E+01	4.7E+00	7.3E+01	6.8E+01
7.0	2.9E+01	4.2E+01	1.7E+03	1.1E+02	2.5E+06	1.8E+01	8.7E+01	8.8E+01	1.3E+01	4.3E+00	7.4E+01	7.5E+01
7.1	2.9E+01	4.3E+01	2.5E+03	1.5E+02	2.8E+06	1.7E+01	9.9E+01	1.1E+02	1.6E+01	4.1E+00	7.6E+01	8.3E+01
7.2	3.0E+01	4.4E+01	3.8E+03	2.0E+02	3.1E+06	1.7E+01	1.2E+02	1.4E+02	2.0E+01	3.8E+00	7.8E+01	9.5E+01
7.3	3.0E+01	4.4E+01	5.7E+03	2.8E+02	3.4E+06	1.6E+01	1.3E+02	1.8E+02	2.5E+01	3.5E+00	8.0E+01	1.1E+02
7.4	3.0E+01	4.5E+01	8.6E+03	4.0E+02	3.7E+06	1.6E+01	1.5E+02	2.5E+02	3.1E+01	3.3E+00	8.2E+01	1.3E+02
7.5	3.0E+01	4.6E+01	1.3E+04	5.9E+02	3.9E+06	1.6E+01	1.6E+02	3.5E+02	3.9E+01	3.1E+00	8.5E+01	1.6E+02
7.6	3.1E+01	4.6E+01	2.0E+04	8.7E+02	4.1E+06	1.5E+01	1.7E+02	4.9E+02	4.8E+01	2.9E+00	8.7E+01	1.9E+02
7.7	3.1E+01	4.7E+01	3.0E+04	1.3E+03	4.2E+06	1.5E+01	1.8E+02	7.0E+02	5.9E+01	2.7E+00	8.9E+01	2.4E+02
7.8	3.1E+01	4.9E+01	4.6E+04	1.9E+03	4.3E+06	1.4E+01	1.9E+02	9.9E+02	7.3E+01	2.5E+00	9.1E+01	3.1E+02
7.9	3.1E+01	5.0E+01	6.9E+04	2.9E+03	4.3E+06	1.4E+01	1.9E+02	1.4E+03	8.9E+01	2.4E+00	9.4E+01	4.0E+02
8.0	3.1E+01	5.2E+01	1.0E+05	4.3E+03	4.3E+06	1.4E+01	2.0E+02	1.9E+03	1.1E+02	2.2E+00	9.6E+01	5.3E+02

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TABLE J Values to be Substituted for k(s) when Evaluating Inorganics as a Function of pH(a)

Section 742.APPENDIX C: Tier 2 Tables and Illustrations

TABLE J: Values to be Substituted for k, when Evaluating Inorganics as a Function of pH^a

pH	As	Ba	Be	Cd	Cr (+3)	Cr (+6)	Hg	Ni	Ag	Se	Ti	Zn
4.9	2.5E+01	1.1E+01	2.3E+01	1.5E+01	1.7E+02	3.1E+01	4.0E+02	1.6E+01	1.0E+01	1.8E+01	4.5E+01	1.6E+01
5.0	2.5E+01	1.2E+01	2.6E+01	1.7E+01	1.9E+02	3.1E+01	6.0E+02	1.8E+01	1.3E+01	1.7E+01	4.5E+01	1.8E+01
5.1	2.5E+01	1.4E+01	2.8E+01	1.9E+01	3.0E+02	3.0E+01	9.0E+02	2.0E+01	1.6E+01	1.6E+01	4.6E+01	1.9E+01
5.2	2.6E+01	1.5E+01	3.1E+01	2.1E+01	4.9E+02	2.9E+01	1.4E+01	2.2E+01	2.1E+01	1.5E+01	4.7E+01	2.1E+01
5.3	2.6E+01	1.7E+01	3.5E+01	2.3E+01	8.1E+02	2.8E+01	2.0E+01	2.4E+01	2.6E+01	1.4E+01	4.8E+01	2.3E+01
5.4	2.6E+01	1.9E+01	3.8E+01	2.5E+01	1.3E+04	2.7E+01	3.0E+01	2.6E+01	3.3E+01	1.3E+01	5.0E+01	2.5E+01
5.5	2.6E+01	2.1E+01	4.2E+01	2.7E+01	2.1E+04	2.7E+01	4.6E+01	2.8E+01	4.2E+01	1.2E+01	5.1E+01	2.6E+01
5.6	2.6E+01	2.2E+01	4.7E+01	2.9E+01	3.5E+04	2.6E+01	6.9E+01	3.0E+01	5.3E+01	1.1E+01	5.2E+01	2.8E+01
5.7	2.7E+01	3.4E+01	5.3E+01	3.1E+01	5.5E+04	2.5E+01	1.0E+02	3.2E+01	6.7E+01	1.1E+01	5.4E+01	3.0E+01
5.8	2.7E+01	2.6E+01	6.0E+01	3.3E+01	8.7E+04	2.5E+01	1.6E+02	3.4E+01	8.4E+01	9.8E+01	5.5E+01	3.2E+01
5.9	2.7E+01	2.8E+01	6.9E+01	3.5E+01	1.3E+05	2.4E+01	2.3E+02	3.6E+01	1.1E+02	9.3E+01	5.6E+01	3.4E+01
6.0	2.7E+01	3.0E+01	8.2E+01	3.7E+01	2.0E+05	2.3E+01	3.5E+02	3.8E+01	1.3E+02	8.6E+01	5.8E+01	3.6E+01
6.1	2.7E+01	3.1E+01	9.9E+01	4.0E+01	3.0E+05	2.3E+01	5.1E+02	4.0E+01	1.7E+02	8.0E+01	5.9E+01	3.9E+01
6.2	2.8E+01	3.3E+01	1.2E+02	4.2E+01	4.7E+05	2.2E+01	7.5E+02	4.2E+01	2.1E+02	7.5E+01	6.1E+01	4.2E+01
6.3	2.8E+01	3.5E+01	1.5E+02	4.4E+01	5.8E+05	2.2E+01	1.1E+03	4.5E+01	2.7E+02	7.0E+01	6.2E+01	4.4E+01
6.4	2.8E+01	3.6E+01	2.1E+02	4.8E+01	7.7E+05	2.1E+01	1.6E+03	4.7E+01	3.4E+02	6.5E+01	6.4E+01	4.7E+01
6.5	2.8E+01	3.7E+01	2.8E+02	5.2E+01	9.9E+05	2.0E+01	2.2E+03	5.0E+01	4.2E+02	6.1E+01	6.6E+01	5.1E+01
6.6	2.8E+01	3.9E+01	3.9E+02	5.7E+01	1.2E+06	2.0E+01	3.0E+03	5.3E+01	5.3E+02	5.7E+01	6.7E+01	5.3E+01

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TABLE K Parameter Estimates for Calculating Water-Filled Soil Porosity (Ω_{water})

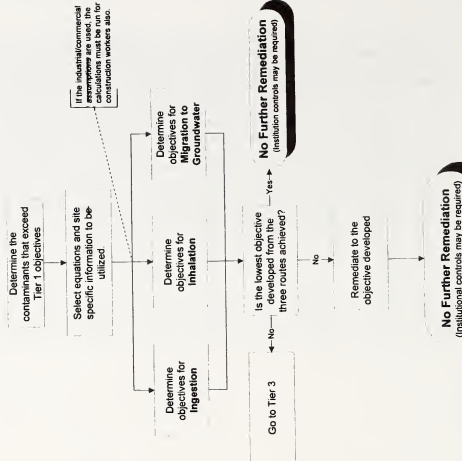
Soil Texture(a)	K(s)	$L/(2B+3)$
Sand	1,830	0.090
Loamy Sand	540	0.085
Sandy Loam	230	0.080
Silt Loam	120	0.074
Loam	60	0.073
Sandy Clay Loam	40	0.058
Silt Clay Loam	13	0.054
Clay Loam	20	0.050
Sandy Clay	10	0.042
Silt Clay	8	0.042
Clay	5	0.039

(a) The appropriate texture classification is determined by a particle size analysis by ASTM D2488-93 as incorporated by reference in Section 742.210 and the U.S. Department of Agriculture Soil Textural Triangle shown in Appendix C, illustration C.

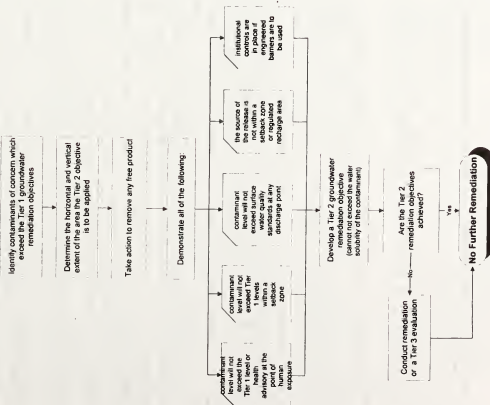
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ILLUSTRATION A Tier 2 Evaluation for Soil

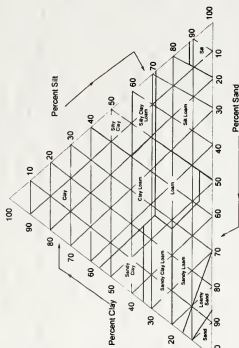


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ILLUSTRATION B Tier 2 Evaluation for Groundwater



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ILLUSTRATION C U.S. Department of Agriculture Soil Texture Classification



Criteria Used with the Field Method for Determining Soil Texture Classes

Criterion	Sand	Sandy loam	Loam	Silt loam	Clay loam	Clay
1. Individual grains visible to eye	Yes	Yes	Some	Few	No	No
2. Stability of dry clods	Do not form	Do not form	Easily broken	Moderately easily broken	Hard and stable	Very hard and stable
3. Stability of wet clods	Unstable	Slightly stable	Moderately stable	Stable	Very stable	Very stable
4. Stability of "ribbon" when thumb and fingers are rubbed between thumb and fingers	Does not form	Does not form	Does not form	Broken appearance	Thin, will break	Very long, flexible

Particle Size, mm

0.002	0.05	0.10	0.5	1.0	2.0
Clay	Silt	Med.	Coarse	Very Coarse	Gravel
			Sand		

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Section 742.APPENDIX D Procedures for Determination of Class II Groundwater

The following is a procedure to demonstrate that groundwater beneath a site meets the criteria set forth in Class II groundwater, Code 620.210 and, therefore, needs only to meet the Class I groundwater standards. A Class II Groundwater is classified in 35 Ill. Adm. Code 620 as a Class II, general resource groundwater when it:

- 1) Does not meet the provisions of 35 Ill. Adm. Code 620.230 (Class III) or 35 Ill. Adm. Code 620.240 (Class IV) (Determining whether the groundwater is Class III or Class IV is relatively straight forward, as is the requirement to determine if the groundwater has previously been classified as Class II Groundwater by the Illinois Pollution Control Board (Board)); or
- 2) Has been found by the Board to be a Class II groundwater, pursuant to the petition procedures set forth in 35 Ill. Adm. Code 620.260 (If a continuous zone containing groundwater begins within ten feet of the ground surface and extends greater than ten feet below the ground surface it will not be considered a Class II groundwater if an additional criterion is met under 35 Ill. Adm. Code 620.210; in this case it would be considered Class I groundwater. Although it may be possible, it is unrealistic to try to designate two distinct classes of groundwater within the same saturated hydrogeologic unit. But, if the person conducting the remediation can demonstrate that by cleaning the contaminated zone the groundwater will be of a higher quality, the specifications will not degrade the groundwater greater than 10 feet below the ground surface above Class I standards, the Agency may approve both Class I and II standards in accordance with the location of the groundwater.); or

- 3) Is located less than 10 feet below the ground surface; or

- 4) Does not meet the provisions of 35 Ill. Adm. Code 620.210, which is further discussed in paragraphs (A) through (D) below.

Initially, the sources of information listed below should be considered to determine the appropriate classification of groundwater:

- 1) Published data concerning regional and local geologic and hydrogeologic conditions (i.e., geologic surveys, former site investigations, etc.).
- 2) The locations of all potable water wells located within one mile of the site with the logs and/or dates of well completion attached.
- 3) Available data on-site boring logs which characterize the geology from ground surface to the first saturated unit or, if a perched zone is

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present, the first saturated unit below the perched zone.

If after collecting and reviewing the above information the groundwater is classified as Class II, the Agency will establish the appropriate remedial classification as Class II groundwater, further investigation including site-specific information must be utilized to make a determination that the groundwater is subject to the Class II standards. If the site geology or hydrogeologic properties pass all criteria listed below, the groundwater is a Class II groundwater. The information requirements listed describe the minimum documentation which should be provided to the Agency.

- A) Groundwater cannot be located within the minimum setback of a well which serves as a potable water supply and to the bottom of such well. The minimum setback zone of a well extends from the land surface to the minimum depth of the well casing. This setback zone establishes a three-dimensional zone of protection around the well.

Section 14 of the Environmental Protection Act (Act) established setback requirements for potable water supply wells and potential sources/routes of contamination. Unless regulatory relief consistent with this Section of the Act has been sought and received, no new sources/routes may be located within 200 feet of a potable water supply well or 400 feet of a vulnerable community water supply well. Further, the converse of this statement also applies (e.g., no new potable water supply wells may be located within 200 feet of a future source or route of contamination). A 400 foot separation is required for a vulnerable community water supply well. In addition, a community water supply may establish maximum setback zones of up to 1,000 feet around the wells. This may cause further siting restrictions for new activities as well as require technology controls under 35 Ill. Adm. Code 615 and 616 for existing and new activities.

This requirement may be satisfied by the submission of a scaled map delineating the site and all potable water wells located within a one mile radius from the unit(s) of concern. The Illinois State Water Survey (ISWS) may be contacted for assistance in locating water wells. The Agency should be contacted, as well as other appropriate state and federal entities, to obtain this information. A copy of the state or federal agency's response to an information inquiry should be included with the information submitted by the person conducting the remediation. Also, a visual inspection of the area within 200 feet of the unit(s) of concern should be conducted when possible to detect unplugged private wells.

- B) Formations beneath the site cannot consist of unconsolidated sand, gravel, or sand and gravel which is free or motion in thickness and contains sand and gravel in excess of 10 percent by volume (10 percent through a No. 200 sieve tested according to ASTM Standard Practice

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D2488-93).

This criterion is specific to the type of formations listed. If a zone of saturation fails this Class II criterion, Class II may still apply pursuant to D below.

This criterion may be satisfied by the submission of, at a minimum, one site-specific continuously sampled boring log which clearly identifies the saturated interval from which a representative sample was obtained. Sieve test analysis should be conducted on several samples from each saturated interval which is at least five feet in thickness and composed of sand-sized grains or greater. In addition, the person conducting the remediation should submit the sieve data sheet, plot, and a scaled map which identifies the location of each boring.

- C) Formations beneath the site cannot consist of sandstone which is 10 feet or more in thickness, or fractured carbonate which is 15 feet or more in thickness.

This requirement may be satisfied by the submission of, at a minimum, one site-specific continuously sampled boring log with a description of the geologic material present. This boring log should extend from the ground surface to a depth which is 10 feet into the uppermost water-bearing unit subject to Class I standards or bedrock, whichever is shallower. The boring(s) should be continuously sampled and located on a scaled site map. A representative sample, as used previously, is a sample obtained from each distinctive saturated unit within the boring. Also, a literature search of regional and local geologic conditions should be conducted with the results submitted to the Agency.

- D) Class II shall not include any geologic material which is shown capable of either of the following:

- * Sustained groundwater yield, from up to a 12 inch borehole, of 150 gallons per day or more from a thickness of 15 feet or less; or

This requirement may be satisfied by the submission of continuously sampled boring logs which demonstrate aquifer thickness. In addition, as-built well construction diagrams should also be submitted to the Agency for review. Furthermore, a pump test or equivalent must be conducted to determine the yield of the geologic material. Methodology, assumptions, and any calculations performed should also be submitted to meet this requirement. If the aquifer geometry and transmissivity have been obtained through a site-specific field investigation, an

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analytical solution may be used to estimate well yield. The person conducting the remediation must demonstrate the appropriateness of an analytical solution to estimate well yield versus an actual field test. Well yield should be determined for either confined or unconfined conditions.

The pump test should consider some minimum pumping rate during the test; the following criteria should be used:

- i) If all areas within 200 feet of the site have access to a water main to provide drinking water from a public water supply system, then a minimum pumping rate of 4 gallons per minute should be used when performing this test.
- ii) If all areas within 200 feet of the site do not have access to a water main to provide drinking water from a public water supply system, then a minimum pumping rate of 0.5 gallons per minute should be used when performing this test.

- * Hydraulic conductivity of 1×10^{-4} cm/sec or greater using one of the following test methods or its equivalent:

This requirement may be satisfied by performing field and/or lab tests such as a permeameter, slug test, and/or pump test.

An appropriate method of evaluation should be chosen based on the type of wells, the length of time over which data may need to be collected and, if known, the characteristics of the targeted aquifer. Such methods and the suggested information to be submitted to the Agency are outlined below and shall include at least one of the following:

- i) Permeameter

If this method is chosen, samples of unconsolidated materials should be left in the field-sampling tubes which then become the permeameter sample chamber. Proceeding in this manner should allow as little disruption to the sample as possible. Unconsolidated samples should not be repacked into the sample chamber. An outline of the laboratory test method used and a description of the steps followed (including any calculations) should be submitted to the Agency for review.

- ii) Slug tests

This information to be submitted to the Agency should

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include a description of the slug test method utilized and a discussion of the procedures followed during the tests, including any calculations performed.

A significant drawback to performing a slug test is that it is heavily dependent on a high-quality intake. If a well point is clogged or corroded, measured values may be inaccurate. Also, if a well is developed by surging or backwashing prior to testing, the measured values may reflect increased conductivities in the artificially recharged pack around the intake. If slug tests are conducted on wells that would be used for drinking water, the representative measures of hydraulic conductivities have been obtained and that lateral variations at various depths are documented.

iii) Pump tests

Preliminary or short-term drawdown tests should be performed initially to assess the appropriate pumping rate for the constant-rate tests. Several methods and/or equations may be used in evaluating data generated from pump tests such as Theis, Hantush-Jacob, Soreley and/or their equations. The Illinois Department of Revenue provides a procedure for the agency with justification for their use. Explorations of any assumptions made and examples of all calculations performed along with a description of the physical tests performed, including the type of pump used).

NOTE: It may be beneficial to use laboratory evaluation methods to further support results of field tests; however, field methods provide the best definition of the hydraulic conductivity in most cases. The most appropriate method to determine hydraulic conductivity for most sites will be the pump test, provided proper evaluation of the data obtained from the test is utilized. Pump tests provide in-situ measurements that encourage the use of slug tests, and are preferred since they are able to characterize a greater portion of the subsurface compared to the other aquifer tests. Slug tests provide in-situ values representative of a small volume of porous media in the immediate vicinity of a piezometer tip, providing point values only, and may be more appropriate in very low-permeability materials in which conductivity is too small to conduct a pump test.

DEPARTMENT OF REVENUE

NOTICE OF PROPOSED AMENDMENTS

- 1) Heading of the Part: Property Tax Code
- 2) Code Citation: 96 Ill. Adm. Code 110
- 3) Section Numbers: 110-192
Proposed Action: New Section
- 4) Statutory Authority: 35 ILCS 200
- 5) A Complete Description of the Subjects and Issues Involved: This rulemaking provides guidance to county clerks in notifying the Department of the results on referenda regarding the applicability of PRMIL.
- 6) Will this proposed rule replace an emergency rule currently in effect: No
- 7) Does this rulemaking contain an automatic repeal date: No
- 8) Does this proposed amendment contain incorporations by reference: No
- 9) Are there any other proposed amendments pending on this Part: No
- 10) Statement of Statewide Policy Objectives: This rulemaking does not impose a State Mandate, nor does it affect any existing State Mandate.
- 11) Time, Place and Manner in which interested persons may comment on this proposed rulemaking: Persons who wish to submit comments on this proposed rule may submit them in writing by no later than 45 days after publication of this notice to:

Jerry Manter
Senior Counsel - Property Tax
Illinois Department of Revenue
Office of General Counsel
101 West Jefferson
Springfield, IL 62708
(217) 782-6336
- 12) Initial Regulatory Flexibility Analysis:
 - A) Types of small businesses affected: None
 - B) Retaining, bookkeeping or other procedures required for compliance: County clerks are required to immediately notify the Department of the results on referenda regarding the applicability of PRMIL.
 - C) Types of professional skills necessary for compliance: None
- 13) Regulatory Agenda on which this rulemaking was summarized: This

ENVIRONMENTAL PROTECTION AGENCY

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In Section 366.102(a), "Subtitle C, Part" has been stricken.

In Section 366.102(a), "(415 ILCS 5/1 et seq.)" has been changed to "(415 ILCS 5/1)".

In Section 366.102(b), in the definition of "Monitoring Reports" "(415 ILCS 5/1 et seq.)" has been changed to "(415 ILCS 5/1)".

In the Source Note to Section 366.102, "Amended at ____ Ill. Reg. ____ effective ____ 1995" has been changed to "Added at 20 Ill. Reg. ____ effective ____ 1995".

In Section 366.103, "of" has been added after "Census".

In Section 366.103, a comma has been added after "Social" and "Economic".

In the Source Note to Section 366.103, "Amended at ____ Ill. Reg. ____ effective ____ 1995" has been changed to "Added at 20 Ill. Reg. ____ effective ____ 1995".

In the heading of 366.104, "Section 366.103f" has been changed to "Section 366.103d".

In the Source Note to Section 366.104, "Amended at ____ Ill. Reg. ____ effective ____ 1995" has been changed to "Section 366.104 renumbered from Section 366.103 and amended at 20 Ill. Reg. ____ effective ____ 1995".

In the heading of Section 366.105, "Section 366.104c" has been changed to "Section 366.103d".

In Section 105 "state" has been stricken and "State" has been added.

In Section 366.105 "366.105" has been stricken and "366.106 of" has been added.

In the Source Note to Section 366.105, "Amended at ____ Ill. Reg. ____ effective ____ 1995" has been changed to "Section 366.105 renumbered from Section 366.104 and amended at 20 Ill. Reg. ____ effective ____ 1995".

In the heading of Section 366.106, "Section 366.105f" has been changed to "Section 366.106d".

In the Source Note to Section 366.106, "Amended at ____ Ill. Reg. ____ effective ____ 1995" has been changed to "Section 366.106 renumbered from 366.105 and amended at 20 Ill. Reg. ____ effective ____ 1995".

ENVIRONMENTAL PROTECTION AGENCY

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In the heading of Section 366.107, "Section 366.106f" has been changed to "Section 366.107d".

In the Source Note to Section 366.107, "Amended at ____ Ill. Reg. ____ effective ____ 1995" has been changed to "Section 366.107 renumbered from Section 366.106 and amended at 20 Ill. Reg. ____ effective ____ 1995".

In Section 366.202, "of" has been added after "Census"; "Populations" has been changed to "Population"; a comma has been added after "Social" and "Economic"; and a comma has been added after "Bureau of the Census".

In the Source Note to Section 366.202, "Amended at ____ Ill. Reg. ____ effective ____ 1995" has been changed to "Amended at 20 Ill. Reg. ____ effective ____ 1995".

In the Source Note to Section 366.206, "Amended at ____ Ill. Reg. ____ effective ____ 1995" has been changed to "Amended at 20 Ill. Reg. ____ effective ____ 1995".

In Section 366.304, "municipalities" has been changed to "municipality's".

In the Source Note to Section 366.304, "Amended at ____ Ill. Reg. ____ effective ____ 1995" has been changed to "Amended at 20 Ill. Reg. ____ effective ____ 1995".

In the Source Note to Section 366.307, "Amended at ____ Ill. Reg. ____ effective ____ 1995" has been changed to "Amended at 20 Ill. Reg. ____ effective ____ 1995".

12) Have all the changes agreed upon by the Agency and JCAR been made as indicated in the Agreement Letter issued by JCAR? Yes

13) Will this rulemaking replace an emergency rule currently in effect? No

14) Are there any amendments pending on this Part? No

15) Summary and Purpose of Rulemaking: The IEPA has amended its methodology for prioritizing applications for loans from the Water Pollution Control Revolving Loan Fund for municipal wastewater treatment plants to take into account data from the 1990 census as well as changes in procedures of the Illinois Department of Public Health and the Department of Commerce and Community Affairs that affect the IEPA's loan priority calculations.

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- 16) Information and questions regarding these adopted amendments shall be directed to:

Ronald L. Drainer
 Grants Manager, Bureau of Water
 Illinois Environmental Protection Agency
 211 North LaSalle
 Post Office Box 1276
 Springfield, IL 62794-9276
 (217) 782-2027

The full text of the Adopted Amendment begins on the next page:

ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF ADOPTED AMENDMENTS

TITLE 35: ENVIRONMENTAL PROTECTION
 SUBTITLE C: WATER POLLUTION
 CHAPTER II: ENVIRONMENTAL PROTECTION AGENCY

PART 366

PROCEDURES AND REQUIREMENTS FOR

DETERMINING LOAN PRIORITIES FOR MUNICIPAL WASTEWATER
 TREATMENT WORKS

SUBPART A: INTRODUCTION

Section

366.101

Purpose

366.102

Definitions

366.103

Incorporations by Reference

366.104a3

Priority System and Project Priority List

366.105a4

Funding Allocations

366.106a5

Pre-applications

366.107a6

Facility Planning

SUBPART B: PROCEDURE FOR CALCULATING THE LOAN PRIORITY INDEX OF SERVICE
CONTINUATION PROJECTS

Section

366.201

Formula for Computing the Loan Priority Index for Service

Continuation Projects

366.202

A1 Factor (Financial Impact)

366.203

A2 Factor (Water Quality)

366.204

A3 Factor (Organic Load)

366.205

A4 Factor (Assessment of Existing Facilities)

366.206

A5 Factor (Operational Excellence)

SUBPART C: PROCEDURE FOR CALCULATING THE LOAN PRIORITY INDEX OF SERVICE
EXPANSION PROJECTS

Section

366.301

Formula for Computing the Loan Priority Index for Service Expansion

Projects

366.302

B1 Factor (Financial Impact)

366.303

B2 Factor (Water Quality)

366.304

B3 Factor (Economic Benefit)

366.305

B4 Factor (Existing Utilization)

366.306

B5 Factor (Operational Excellence)

366.307

B6 Factor (Health Hazard)

SUBPART D: PROCEDURE FOR CALCULATING LOAN PRIORITY INDEX FOR NEW SERVICE PROJECTS

Section

ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF ADOPTED AMENDMENTS

366.401	Formula for Computing the Loan Priority Index for New Service Projects
366.402	C1 Factor (Financial Impact)
366.403	C2 Factor (Water Quality)
366.404	C3 Factor (Organic Load)
366.405	C4 Factor (Health Hazard)

SUBPART E: PROCEDURE FOR CALCULATING LOAN PRIORITY INDEX FOR COMBINED SEWER SERVICE PROJECTS

Section	Formula for Computing the Loan Priority Index for Combined Sewer Projects
366.501	D1 Factor (Financial Impact)
366.502	D2 Factor (Drainage Area)
366.503	D3 Factor (Floodings Frequency)
366.504	D4 Factor (Basement Backups)
366.505	D5 Factor (Percentage of Basements Affected)

SUBPART F: PROCEDURE FOR APPLICATION OF SCORING CONVENTIONS

Section
366.601
Scoring Conventions

APPENDIX A Waterbody Specific Information
 APPENDIX B Service Continuation A4 Factor Scoring Review Sheet
 APPENDIX C Excellence of Operation Scoring Review Sheet For Local Government Units That Own Wastewater Treatment Facilities
 APPENDIX D Excellence of Operation Scoring Review Sheet For Local Government Units That Own Only Wastewater Collection Facilities

AUTHORITY: Implementing and authorized by Sections 19.1 through 19.8 of the Environmental Protection Act (415 ILCS 5/19.1-19.8)

SOURCE: Adopted at 14 Ill. Reg. 8121, effective May 14, 1990; amended at 20 Ill. Reg. 15598, effective November 26, 1996.

SUBPART A: INTRODUCTION

Section 366.101 Purpose

This Part sets forth the procedures and requirements established by the following Environmental Protection Agency (EPA) for determining priorities in awarding financial assistance for the construction of municipal wastewater treatment works under Sections 19.1 through 19.9 of the Environmental Protection Act (the Act) (15 LRS 5/19.1-19.9) (#13-Rev.-Stat.-1988 Slip-Char-444-97-pars-1849-1 through-1849-6) and Title VI of the Federal Clean Water Act (33 U.S.C. 1281, et seq.).

ENVIRONMENTAL PROTECTION AGENCY

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(Source: Amended at 20 Ill. Reg. 15598, effective NOV 26 1906)

Section 366.102 Definitions

a) Unless specified otherwise, all terms shall have the meanings set forth in the Environmental Protection Act (415 ILCS 5) (11/1/1990--Supp. Ch. 111-1/27-para--4001-et-seq., the Federal Clean Water Act (33 U.S.C. 1201 et seq.) and regulations adopted under these Acts, including 35 Ill. Adm. Code--Subtitle G--Part 365.

b) For purposes of these rules, the following definitions apply:

"Agency" -- Illinois Environmental Protection Agency.

"Combined Sewer Service Projects" -- Projects constructed in a combined sewer service area which are intended to reduce or eliminate street, area and basement flooding.

"Fund" -- The Water Pollution Control Revolving Fund as authorized by P.A. 85-1115, effective September 1, 1988.

"Intended Use Plan" -- A plan which includes a description of the short and long term goals and objectives of the Fund, project categories, discharge requirements, terms of financial assistance and the communities to be served.

"Monitoring Reports" -- Reports submitted in response to permits issued under the authority of the Federal Clean Water Act (33 U.S.C. 1281 et seq.), the Environmental Protection Act (415 ILCS 5/3-111-Rev.-Stat-908-Sup-7-ch-111-1/2-par-1001-et-seq), and regulations adopted under these Acts, including discharge (types) permits and State operating permits.

"New Service Project" -- Projects which will provide wastewater collection, transportation or treatment for an unsewered local government unit.

"P.E. BOD" -- A term used to evaluate the impact of industrial or other waste on a treatment works or streams in terms of five day biochemical oxygen demand. One P.E. BOD equals 0.17 pounds (77q).

"Permits" -- National Pollutant Discharge Elimination System (NPDES) permits and State operating permits as described in 35 U.S.C. 1361. Adm. Code--Subpart E--Part 309.

"Priority System" -- A methodology used to rank projects for inclusion on the project priority list.

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"Project Priority List" -- An ordered listing of projects which the Agency has determined are eligible to receive financial assistance from the Fund.

"Service Continuation Project" -- Projects for the improvement, upgrade, rehabilitation, renovation, and/or replacement of wastewater treatment works.

"Service Expansion Project" -- Projects to expand capacity of existing wastewater treatment works.

"Title VI" -- Title VI of the Federal Clean Water Act (33 U.S.C. 1261 et seq.).

"USEPA Reach File" -- Hydrologic Nomenclature System developed by USEPA to identify and locate specific waterbodies.

(Source: Amended at 20 Ill. Reg. **15598**, effective NOV 26 1990)

Section 366.103 Incorporations by Reference

U.S. Department of Commerce, Economics and Statistics Administration, Bureau of Economic Analysis, 1990 Census of Population and Housing: Summary of Economic Characteristics, Illinois, Table 10, 1990 CPH-S-15 TWO LATER EDITIONS OF AMENDMENTS.

(Source: Added at 20 Ill. Reg. **15598**, effective NOV 26 1990)

Section 366.104a3 Priority System and Project Priority List

- Financial assistance will be provided from the Fund only to projects which are identified on the project priority list.
- This Part sets forth a priority system to be used to rank projects for inclusion on the project priority list. The ranking of a project is as calculated under Subparts B, C, D and E of this Part.
- The project priority list shall be published annually in the preliminary report of the Control Program. The project priority list shall be published in Section 106 of the Federal Clean Water Act (33 U.S.C. 1256). After the public hearing is held to discuss the Program Plan, the Agency shall evaluate and consider any public comments received concerning the project priority list. The final project priority list shall be published in the final Water Pollution Control Program Plan.
- The Agency will develop a priority list with four (4) separate classes of projects:
 - Service Continuation Projects
 - Service Expansion Projects

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3) New Service Projects

- Combined Sewer Projects
- Data provided in the applicant's pre-application will determine the appropriate class for each project for which assistance is requested from the Fund.

(Source: Section 366.104 renumbered from Section 366.103 and amended at 20 Ill. Reg. **15598**, effective NOV 26 1990)

Section 366.105a4 Funding Allocations

- In the development of its priority list, the Agency will allocate available loan funds to the four major classes of projects in proportion to the relative needs of the State for each project class, subject to the limitations of Section 602(b)(6) of the Clean Water Act (33 U.S.C. 1382(b)(6)).
- Annual allocations of available loan funds to each class shall initially be made on the basis of State wastewater needs as identified in the pre-applications for projects that qualify for inclusion on the Intended Use Plan for that fiscal year in accordance with the requirements of 35 Ill. Adm. Code 365.410(C), which are part of approved facilities plans (35 Ill. Adm. Code 365.465-Subpart B) as of the pre-application filing deadline (35 Ill. Adm. Code 365.465-Subpart B). For the extended use plan, only the initial allocation to projects shall be made. The extended use plan shall be made in a statewide survey of wastewater needs (Section 39-7 of the Act).
- After January 1 of each fiscal year, the Agency may adjust its allocations of available funds among project classes in the Intended Use Plan (see 35 Ill. Adm. Code 365.420(a)), to reflect the relative needs contained in completed loan applications, subject to the relative availability of loan funds for that fiscal year.
- Loan funds available from State and Federal appropriations during the capitalization period authorized by Section 607 of the Clean Water Act to capitalize the Water Pollution Control Revolving Fund will be subject to an equal division between the service area of the Metropolitan Water Reclamation District of Greater Chicago and the area which is comprised of the geographical balance of the State and, to the extent that projects in either area in any fiscal year are qualified to receive loan assistance and are ready to proceed in accordance with the criteria for loan award (see 35 Ill. Adm. Code 365.430(a)).
- If sufficient projects in either area are not able to complete a loan application in any fiscal year to permit an equal division of the above funds, loans will be made to those projects which are able to complete a loan application to the extent that the appropriated funds are available.
- Any imbalance in the division of the total loan funds appropriated during the capitalization period authorized by the Clean Water Act to

ENVIRONMENTAL PROTECTION AGENCY

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capitalize the Water Pollution Control Revolving Fund shall be carried forward from year to year and shall be applied as projects are able to complete a loan application to achieve an accumulatively equal distribution subject to the constraints of Section 366.106 of 366-105 and this Part.

(Source: Section 366.105 renumbered from Section 366.104 and amended at 20 Ill. Reg. 15593, effective NOV 26 1996)

Section 366.106-45 Pre-applications

- A local government unit may submit a pre-application at any time. The pre-application must identify the class of the project, the discharge location point, the scope of the project, the population tributary to the project, a cost estimate and schedule for completion of the project.
- An applicant is required to renew its pre-application annually.
- Pre-applications must be received by March 31st of the preceding fiscal year to be included on the Intended Use Plan.
- A project with approved facility planning may be added to the priority list at any time by the submission of a pre-application.

(Source: Section 366.106 renumbered from Section 366.105 at 20 Ill. Reg. 15593, effective NOV 26 1996)

Section 366.107-66 Facility Planning

- A project's priority will be adjusted to reflect completed and approved facility planning (see 35 Ill. Adm. Code 365: Subpart E).
- Projects may be split into more than one project, deleted or modified at the option of the applicant on the priority list as a result of the approval of the facility planning.

(Source: Section 366.107 renumbered from Section 366.106 at 20 Ill. Reg. 15593, effective NOV 26 1996)

SUBPART B: PROCEDURE FOR CONTINUATION INDEX OF SERVICE CONTINUATION PROJECTS

Section 366.202 A1 Factor (Financial Impact)

A1 is a factor which evaluates the financial impact of wastewater improvements on the residents of the municipality. The A1 factor is based on median household income for the smallest governmental entity that encompasses the wastewater service area as presented in the 1990 Census of Population and Housing, Table 10, as published by the U.S. Department of Commerce, Bureau of Economic and Statistics Administration. Bureau of the Census, or the applicant will

ENVIRONMENTAL PROTECTION AGENCY

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Provide a determination of the mid-point of the distribution of the annual income of at least 80% of the households in the project service area (commonly known as median household income). The A1 factor is based on median household income and is calculated as follows:

Greater than \$0	1.10
But less than \$15,000	1.09
\$15,000 - \$19,999	1.08
\$20,000 - \$24,999	1.07
\$25,000 - \$29,999	1.06
\$30,000 - \$34,999	1.05
\$35,000 - \$39,999	1.04
\$40,000 - \$44,999	1.03
\$45,000 - \$49,999	1.02
\$50,000 - \$54,999	1.01
\$55,000 - \$59,999	1.00
Greater than \$59,999	1.00

Less than \$10,000	1.10
\$10,000 - \$14,999	1.09
\$15,000 - \$19,999	1.08
\$20,000 - \$24,999	1.07
\$25,000 - \$29,999	1.06
\$30,000 - \$34,999	1.05
\$35,000 - \$39,999	1.04
\$40,000 - \$44,999	1.03
\$45,000 - \$49,999	1.02
\$50,000 - \$54,999	1.01
\$55,000 - \$59,999	1.00
Greater than \$59,999	1.00

(Source: NOV 26 1996 at 20 Ill. Reg. 15593, effective NOV 26 1996)

Section 366.206 A5 Factor (Operational Excellence)

A5 is a factor which evaluates the operation of the existing facilities and provides a bonus for excellence of operation. For mechanical treatment and sewage collection facilities that have exhibited excellence in operation and maintenance by receiving a score of 15 or greater out of a possible composite score of 20, or lagoon treatment facilities that have exhibited excellence in operation and maintenance by receiving a score of 13.5 or greater out of a possible composite score of 20, 1.5 points will be awarded. All others will be 1.0. This factor will be calculated by the Agency using the criteria in Appendix C or D.

(Source: NOV 26 1996 at 20 Ill. Reg. 15593, effective NOV 26 1996)

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SUBPART C: PROCEDURE FOR CALCULATING THE LOAN PRIORITY INDEX OF SERVICE EXPANSION PROJECTS

Section 366.304 B3 Factor (Economic Benefit)

a) $B3$ is a factor that evaluates the potential for economic benefit and the managerial capability of the municipality. Additional points will be awarded for having an annual unemployment percentage above the State average as determined by the Department of Employment Security pursuant to Section 43a.08 of the Civil Administrative Code of Illinois (Code) [20 ILCS 5/43a.08] (4311-Rev-Sept-1987)-ch-427, par-43a-8d and 20 CFR 634 (1989) (no subsequent dates or editions) and/or for being a certified city as determined by the Department of Commerce and Community Affairs pursuant to Section 1-36(a) of the Code, information concerning a municipality's managers and employees is contained in the Illinois Municipal League's Municipal Analysis Section, Department of Commerce, 555 S. Pasfield, Floor 2, Springfield, Illinois 62704 (217) 785-4624.

b) $B3$ is calculated as (unemployment rate factor) + (certified-city factor) + 1.

ii) Where the applicant's unemployment rate is above the State average, unemployment rate points will be awarded as follows:

less than 1% above the State state average = 0.0

-2.9% above the State state average = 0.1

3.0-5% above the State average = 0.2

55% above State state average = 0.3

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(Source: Amended at 20 Ill. Reg. 13398, effective
NOV 26 1996)

Section 366.307 B6 Factor (Health Hazard)

096 is a health hazard factor for use with failing septic systems. In unsewered areas to be served by collection system extensions. Projects that are determined by the responsible public health agency to be necessary to correct an existing public health hazard on the Illinois Department of Public Health's National Health Hazard list established by the Illinois Revised Statutes (1987 Ch. 127, par. 454-947) will be assigned a value of 1.1 and all others will be assigned a value of 1.0.

(Source: Amended at 20 Ill. Reg. 1000, effective
Nov 26 1984)

DEPARTMENT OF REHABILITATION SERVICES

NOTICE OF ADOPTED AMENDMENTS

1) Heading of the Part: Non-Academic Programs and Policies

2) Code Citation: 89 Ill. Adm. Code 830

Section Numbers:	Adopted Action:
830-190	New Section

4) Statutory Authority: Implementing Sections 10 and 11 and authorized by Section 3 of the Disabled Persons Rehabilitation Act [20 ILCS 2405/10, 11 and 3f].

5) Effective Date of Rulemaking: November 22, 1996

5) Does this rulemaking contain an automatic repeal date? No

2) Does this rulemaking contain incorporations by reference? No

a) Date Filled in Agency's Principal Office: November 22, 1996

9) Notice of Proposal Published in Illinois Register: June 21, 1996, 20 Ill. Reg. 8258

10) Has JCAR issued a Statement of Objections to these rules? No

12) Have all the changes agreed upon by the agency and JCAR been made as indicated in the agreement letter issued by JCAR? Yes

113) Will this rulemaking replace an emergency rule currently in effect? No

114) Are there any amendments pending on this Part? No

15) Summary and Purpose of Rulemaking: This rule prohibits the use of all tobacco products on all school grounds.

16) Information and questions regarding this adopted amendment shall be directed to:

Name: Ms. Susan Warrner, Manager.

Address: Regulations and Procedures Division
Department of Rehabilitation Services

Springfield, IL 62794-9429

Phone: (217) 785-3896

TTY: (217) 785-9301

The full text of the Adopted Amendment begins on the next page:

DEPARTMENT OF REHABILITATION SERVICES

NOTICE OF ADOPTED AMENDMENTS

TITLE 89: SOCIAL SERVICES
 CHAPTER IV: DEPARTMENT OF REHABILITATION SERVICES
 SUBCHAPTER f: EDUCATION FACILITIES

PART 830

NON-ACADEMIC PROGRAMS AND POLICIES

Section	The Making and Using of Students' Photographs
830.10	Locally Held Funds
830.15	Needy Student Fund
830.20	Student Restrooms
830.25	Student Activity Fees
830.30	Valuables
830.40	Health Services
830.50	Search and Seizure
830.60	Rights and Responsibilities of School Staff
830.70	Food and Nutrition
830.80	Safety and Sanitation
830.90	Donations
830.100	Release of Students to Authorized Individuals
830.110	Use of Motor Vehicles by Students
830.120	Student Activities Requiring Approval of Parents/Guardians
830.130	Visits to Schools
830.140	Admission to School
830.150	Profit on Sales from Commissary Stores
830.160	Receipts from Athletic, Musical and Other Events
830.170	Transportation Fund
830.180	Use of Tobacco Products on School Property
830.190	

AUTHORITY: Implementing Sections 10 and 11 and authorized by Section 3(f) of the Disabled Persons Rehabilitation Act [20 ILCS 2405/10, 11 and 3(f)].

SOURCE: Adopted at 11 Ill. Reg. 15097, effective September 16, 1987; amended at 12 Ill. Reg. 14304, effective August 29, 1988; amended at 15 Ill. Reg. 6272, effective April 15, 1991; amended at 15 Ill. Reg. 1730, effective November 19, 1991; amended at 15 Ill. Reg. 8448, effective April 5, 1993; amended at 18 Ill. Reg. 14240, effective January 1, 1994; amended at 19 Ill. Reg. 5832, effective November 7, 1995; amended at 20 Ill. Reg. **15610**, effective **NOV 22 1995**.

Section 830.190 Use of Tobacco Products on School Property

In conjunction with Section 10-20 of the School Code [105 ILCS 5/10-20] and Section 3 of the Disabled Persons Rehabilitation Act [20 ILCS 2405/3], the Department, under its administrative authority, prohibits the use of all tobacco products on school property. For purposes of this Section tobacco products shall mean cigarette, cigar, or tobacco in any other form, including

DEPARTMENT OF REHABILITATION SERVICES

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smokeless tobacco, which is loose, cut, shredded, ground, powdered, compressed or leaf tobacco. The prohibition against the use of tobacco products is to include school personnel, students, or other persons when on school property. No exception to this prohibition will be permitted, including all events or activities before or after the regular school day and on days when school is not in session.

(Source: Added at 20 Ill. Reg. **15610**, effective **NOV 22 1995**)

DEPARTMENT OF REVENUE

NOTICE OF EMERGENCY AMENDMENTS

- 1) **Heading of the Part:** Property Tax Code
- 2) **Code Citation:** 86 Ill. Adm. Code 110
- 3) **Section Numbers:** Emergency Action:
110.192 New Section
- 4) **Statutory Authority:** 35 ILCS 200
- 5) **Effective Date of Amendments:** November 22, 1996
- 6) **If this emergency amendment is to expire before the end of the 150-day period, please specify the date on which it is to expire:** This Emergency Amendment will remain in effect for the 150-day period.
- 7) **Date filed in Agency's Principal Office:** November 22, 1996
- 8) **Reason for Emergency:** Under Public Act 89-510, effective July 11, 1996, the Department has been authorized to submit to voters the question of applicability of the Property Tax Extension Limitation Law (PTELL) [35 ILCS 200/18-185 through 245]. This question was submitted to voters in 19 counties at referenda on November 5, 1996. The Department has received only a few of the required notices of referendum results.
- 9) **A Complete Description of the Subjects and Issues Involved:** This rulemaking provides guidance to county clerks in notifying the Department of the results on referenda regarding the applicability of PTELL.
- 10) **Are there any amendments to this Part pending:** No
- 11) **Statement of Statewide Policy Objectives:** This rulemaking does not impose a State Mandate, nor does it affect any existing State Mandate.
- 12) **Information and questions regarding this amendment shall be directed to:**

Jerry Lanter
Senior Counsel - Property Tax
Illinois Department of Revenue
Office of General Counsel
101 West Jefferson, 5-500
Springfield, IL 62794
(217) 782-6336

The full text of the emergency amendments begins on the next page:

DEPARTMENT OF REVENUE

NOTICE OF EMERGENCY AMENDMENTS

- 1) **Title 86:** REVENUE
- 2) **Chapter 1:** DEPARTMENT OF REVENUE
- 3) **Part 110:** PROPERTY TAX CODE
- 4) **Section:**
 - 110.101 Railroads
 - 110.105 Non-carrier Real Estate of Railroads
 - 110.110 Procedures for Assessment of Pollution Control Facilities and Low Sulphur Dioxide Emission Coal Fueled Devices
 - 110.115 Exemption Proceedings
 - 110.120 Oil Right Lessees and Producers
 - 110.125 Reports to be Filed with the Department
 - 110.130 Hearings and Records of County Assessor, Supervisor of Assessments or Board of Assessors
 - 110.135 Review of Assessments - Counties of 1,000,000 or More
 - 110.140 Board of Review Procedures and Records - Counties of Less than 1,000,000
 - 110.141 Practice and Procedure
 - 110.145 Factor Review Procedures (Repealed)
 - 110.150 Records Reproduction
 - 110.155 Appointment of Board of Review Members After Examination
 - 110.160 Multi-township Assessment Districts
 - 110.162 Township and Multi-township Assessor Qualifications
 - 110.165 Farmland Assessment Review Procedures
 - 110.170 Assessors' Bonus
 - 110.175 Equalization by Supervisor of Assessments
 - 110.180 Supervisor of Assessments Examination
 - 110.190 Property Tax Extension Limitation
 - 110.192 **Property Tax Extension Limitation Law Modification and Determination Requirements After Referendum Under Section 18-113 of the Property Tax Code**

EMERGENCY

AUTHORITY: Implementing the Property Tax Code [35 ILCS 200] and authorized by Section 39635 of the Civil Administrative Code of Illinois [20 ILCS 2505/39635].

SOURCE: Adopted June 1, 1940; amended at 5 Ill. Reg. 2999, effective March 11, 1981; amended at 5 Ill. Reg. 5888, effective May 26, 1981; amended at 6 Ill. Reg. 9707, effective July 27, 1982; amended at 6 Ill. Reg. 14564, effective November 5, 1982; codified at 7 Ill. Reg. 5886; amended at 8 Ill. Reg. 24285, effective December 5, 1984; amended at 9 Ill. Reg. 159, effective December 26, 1984; amended at 9 Ill. Reg. 12022, effective July 24, 1985; amended at 10 Ill. Reg. 11284, effective June 16, 1986; amended at 10 Ill. Reg. 15125, effective September 2, 1986; amended at 11 Ill. Reg. 19675, effective November 23, 1987; amended at 11 Ill. Reg. 20972, effective December 11, 1987; amended at 12 Ill.

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NOTICE OF EMERGENCY AMENDMENTS

Valuation of any property in the district shall not change the Department's determination of the applicability of the Property Tax Extension Limitation Law to that district.

(Source: Emergency amendment at 20 Ill. Reg. **15613**, effective November 22, 1996, for a maximum of 150 days.)

OFFICE OF BANKS AND REAL ESTATE

NOTICE OF PUBLIC INFORMATION

NOTICE OF PUBLIC MEETING

Notice is hereby given that the State Banking Board of Illinois will hold its regularly scheduled meeting on Tuesday, December 10, 1996, at the Office of Banks and Real Estate, 310 South Michigan Avenue, Suite 2130, Chicago, Illinois. The meeting of the State Banking Board of Illinois will begin at 10:30 a.m. The meeting will be open to the public in accordance with the Open Meetings Act, 5 ILCS 120/1-120/6 (1994).

This meeting will be accessible to disabled individuals in compliance with Executive Order #5 and pertinent state and federal laws upon notification of anticipated attendance. Disabled persons planning to attend and needing special accommodations should contact, either by telephone or by letter, Debra Rath, 500 East Monroe, Springfield, Illinois 62701 or (217)782-3000 to inform of their anticipated attendance.

ENVIRONMENTAL PROTECTION AGENCY
NOTICE OF PUBLIC INFORMATION

LISTING OF DERIVED WATER QUALITY CRITERIA

Pursuant to 35 Ill. Adm. Code 302. Subpart F, the following water quality criteria have been derived as follows. This listing includes only the water quality criteria that have been used during the period August 1, 1996 through October 31, 1996.

A cumulative listing of criteria as of July 31, 1993 was published in 17 Ill. Reg. 16904, October 28, 1993. Listings of criteria used during subsequent periods are as follows: 18 Ill. Reg. 16848, January 17, 1994; 18 Ill. Reg. 4457, March 18, 1994; 18 Ill. Reg. 8730, June 11, 1994; 18 Ill. Reg. 14166, September 9, 1994; 18 Ill. Reg. 17770, December 9, 1994; 19 Ill. Reg. 3563, March 17, 1995; 19 Ill. Reg. 7270, May 26, 1995; 19 Ill. Reg. 12527, September 1, 1995; 20 Ill. Reg. 649, January 5, 1996; 20 Ill. Reg. 4829, March 22, 1996; 20 Ill. Reg. 7549, May 30, 1996; and 20 Ill. Reg. 12278, September 6, 1996.

Chemical: Acenaphthene
CAS #83-32-9
Acute criterion: 124 ug/l
Date criteria derived: November 14, 1991
Applicable waterbodies:
Not used during this period.

Chemical: Acetone
CAS #67-64-1
Acute criterion: 1,530 mg/l
Date criteria derived: May 25, 1993
Applicable waterbodies:
Not used during this period.

Chemical: Acetonitrile
CAS #75-05-8
Acute criterion: 375 mg/l
Date criteria derived: December 7, 1993
Applicable waterbodies:
Not used during this period.

Chemical: Acrylonitrile
CAS #107-13-4
Acute criterion: 910 ug/l
Human health criterion (HHC): 0.21 ug/l
Date criteria derived: November 13, 1991
Applicable waterbodies:
Not used during this period.

Chemical: Anthracene
CAS #120-12-7
Human health criterion (HHC): 35 mg/l
Date criteria derived: August 18, 1993
Applicable waterbodies:
Not used during this period.

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Chemical: Benzene
CAS #71-43-2
Acute criterion: 5,200 ug/l
Human health criterion (HHC): 21 ug/l
Date criteria derived: August 15, 1990
Applicable waterbodies:
Not used during this period.

Chemical: Benz(a)anthracene
CAS #56-55-3
Acute criterion: 0.01 ug/l
Human health criterion (HHC): 0.01 ug/l
Date criteria derived: August 10, 1993
Applicable waterbodies:
Not used during this period.

Chemical: Benzo(a)pyrene
CAS #50-32-8
Human health criterion (HHC): 0.01 ug/l
Date criteria derived: August 10, 1993
Applicable waterbodies:
Not used during this period.

Chemical: Benzo(b)fluoranthene
CAS # 205-99-2
Human health criterion (HHC): 0.01 ug/l
Date criteria derived: August 10, 1993
Applicable waterbodies:
Not used during this period.

Chemical: Benzo(k)fluoranthene
CAS #207-08-9
Human health criterion (HHC): 0.01 ug/l
Date criteria derived: August 10, 1993
Applicable waterbodies:
Not used during this period.

Chemical: Carbon tetrachloride
CAS #56-23-5
Acute criterion: 3,500 ug/l
Human health criterion (HHC): 1.4 ug/l
Date criteria derived: June 18, 1993
Applicable waterbodies:
Not used during this period.

Chemical: Chlorobenzene
CAS #108-90-7
Acute criterion: 993 ug/l
Date criteria derived: December 11, 1991
Applicable waterbodies:
Not used during this period.

Chemical: Chloroform
CAS #67-66-3

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Acute criterion: 1,970 ug/l
 Human health criterion (HHC): 130 ug/l
 Date criteria derived: October 26, 1992
 Applicable waterbodies:
 Not used during this period.

Chemical: Chrysene
 CAS #218-01-9
 Human health criterion (HHC): 0.01 ug/l
 Date criteria derived: August 10, 1993
 Applicable waterbodies:
 Not used during this period.

Chemical: 1,2-dichlorobenzene
 Acute criterion: 210 ug/l
 Chronic criterion: 16.8 ug/l
 Date criteria derived: December 1, 1993
 Applicable waterbodies:
 Not used during this period.

Chemical: 1,3-dichlorobenzene
 Acute criterion: 300 ug/l
 Chronic criterion: 196 ug/l
 Date criteria derived: July 31, 1991
 Applicable waterbodies:
 Not used during this period.

Chemical: 1,2-dichloroethane
 Acute criterion: 24,900 ug/l
 Human health criterion (HHC): 23 ug/l
 Date criteria derived: March 19, 1992
 Applicable waterbodies:
 Not used during this period.

Chemical: 1,1-dichloroethylene
 Acute criterion: 3,030 ug/l
 Human health criterion (HHC): 0.95 ug/l
 Date criteria derived: March 20, 1992
 Applicable waterbodies:
 Not used during this period.

Chemical: 2,4-dichlorophenol
 Acute criterion: 531 ug/l
 Chronic criterion: 83.1 ug/l
 Date criteria derived: November 14, 1991
 Applicable waterbodies:
 Not used during this period.

Chemical: 1,2-dichloropropane
 Acute criterion: 4,800 ug/l
 Chronic criterion: 380 ug/l

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Date criteria derived: December 7, 1993
 Applicable waterbodies:
 Not used during this period.

Chemical: 1,3-dichloropropylene
 CAS #542-75-6
 Chronic criterion: 7.9 ug/l
 Acute criterion: 100 ug/l
 Date criteria derived: November 13, 1991
 Applicable waterbodies:
 Not used during this period.

Chemical: 4,6-dinitro-o-cresol = 2-methyl-4,6-dinitrophenol
 CAS #534-52-1
 Chronic criterion: 2.3 ug/l

Acute criterion: 28.8 ug/l
 Date criteria derived: November 14, 1991
 Applicable waterbodies:
 Not used during this period.

Chemical: 2,4-dinitrophenol
 Acute criterion: 85.3 ug/l
 Chronic criterion: 4.07 ug/l
 Date criteria derived: December 1, 1993
 Applicable waterbodies:
 Not used during this period.

Chemical: 2,6-dinitrotoluene
 Acute criterion: 1,910 ug/l
 Chronic criterion: 153 ug/l
 Date criteria derived: February 14, 1992
 Applicable waterbodies:
 Not used during this period.

Chemical: Ethylbenzene
 Acute criterion: 216 ug/l
 Chronic criterion: 17.2 ug/l
 Date criteria derived: August 15, 1990, revised May 17, 1991
 Applicable waterbodies:
 07090005-021/off Pine Creek
 07090009-003/off sewer to Mississippi River
 07120004-011/off sewer to Des Plaines River
 07120004-019/off sewer to Du Page River, West Branch
 07130008-013/off unnamed tributary to Sangamon River
 07140106-067/off sewer to Little Crab Orchard Creek

Chemical: Fluoranthene
 CAS #206-44-0
 Human health criterion (HHC): 120 ug/l
 Date criteria derived: August 10, 1993
 Applicable waterbodies:
 Not used during this period.

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Chemical: Hexachlorobenzene
Human health criterion (HHC): 0.00025 ug/l
Date criteria derived: November 15, 1991
Applicable waterbodies:
Not used during this period.

Chemical: Hexachlorobutadiene
Acute criterion: 34.5 ug/l
Date criteria derived: March 23, 1992
Applicable waterbodies:
Not used during this period.

Chemical: Hexachloroethane
Acute criterion: 381 ug/l
Human health criterion (HHC): 2.9 ug/l
Date criteria derived: November 15, 1991
Applicable waterbodies:
Not used during this period.

Chemical: Isobutyl alcohol = 2-methyl-1-propanol
Acute criterion: 434 mg/l
Date criteria derived: December 1, 1993
Applicable waterbodies:
Not used during this period.

Chemical: Methylene chloride
Acute criterion: 17,200 ug/l
Human health criterion (HHC): 340 ug/l
Date criteria derived: January 21, 1992
Applicable waterbodies:
Not used during this period.

Chemical: Methylcyclopentane
Acute criterion: 322,000 ug/l
Date criteria derived: July 1, 1992
Applicable waterbodies:
Not used during this period.

Chemical: 4-methyl-2-pentanone
Acute criterion: 46 mg/l
Date criteria derived: January 13, 1992
Applicable waterbodies:
Not used during this period.

Chemical: Naphthalene
CAS #91-20-3

CAS #118-74-1
Chronic criterion: 2.76 ug/l

CAS #67-72-1
Chronic criterion: 30.5 ug/l

CAS #87-83-1
Chronic criterion: 34.8 mg/l

CAS #75-09-2
Chronic criterion: 1,380 ug/l

CAS #78-93-3
Chronic criterion: 26,000 ug/l

CAS #108-10-1
Chronic criterion: 3.68 mg/l

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Acute criterion: 670 ug/l
Date criteria derived: November 7, 1991
Applicable waterbodies:
Not used during this period.

Chemical: Nitrobenzene
Acute criterion: 15.4 mg/l
Human health criterion (HHC): 0.52 mg/l
Date criteria derived: February 14, 1992
Applicable waterbodies:
Not used during this period.

Chemical: Pentachlorophenol
Acute criterion: 20 ug/l
Date criteria derived: national criterion, September 1986
Applicable waterbodies:
Not used during this period.

Chemical: Phenanthrene
Acute criterion: 46 ug/l
Date criteria derived: October 26, 1992
Applicable waterbodies:
Not used during this period.

Chemical: Pyrene
Human health criterion (HHC): 3,500 ug/l
Date criteria derived: December 22, 1992
Applicable waterbodies:
Not used during this period.

Chemical: Tetrachloroethylene
Acute criterion: 1,220 ug/l
Date criteria derived: March 23, 1992
Applicable waterbodies:
Not used during this period.

Chemical: Tetrahydrofuran
Acute criterion: 216,000 ug/l
Date criteria derived: March 16, 1992
Applicable waterbodies:
Not used during this period.

Chemical: Toluene
Acute criterion: 9,080 ug/l
Date criteria derived: August 16, 1990, revised May 17, 1991 and January 26, 1993

CAS #98-95-3
Chronic criterion: 4.67 mg/l

CAS #85-01-8
Chronic criterion: 3.7 ug/l

CAS #120-00-0

CAS #17-18-4
Chronic criterion: 152 ug/l

CAS #109-99-9
Chronic criterion: 17,300 ug/l

CAS #108-88-3
Chronic criterion: 646 ug/l

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Applicable waterbodies:

07100005-021/off Creek
 070900009-003/off sewer to Mississippi River
 071200004-011/off sewer to Du Plaines River
 071200004-019/off sewer to Du Page River, West Branch
 071300008-013/off unnamed tributary to Sangamon River
 07140106-067/off sewer to Little Crab Orchard Creek

Chemical: 1,2,4-trichlorobenzene

CAS #120-82-1

Acute criterion: 353 ug/l

Chronic criterion: 69.2 ug/l

Date criteria derived: December 14, 1993

Applicable waterbodies:

Not used during this period.

Chemical: 1,1,1-trichloroethane

CAS #71-35-6

Acute criterion: 4,910 ug/l

Chronic criterion: 393 ug/l

Date criteria derived: October 26, 1992

Applicable waterbodies:

Not used during this period.

Chemical: 1,1,2-trichloroethane

CAS #79-00-5

Acute criterion: 19,000 ug/l

Chronic criterion: 3,540 ug/l

Human health criterion (HHC): 12 ug/l

Date criteria derived: December 13, 1993

Applicable waterbodies:

Not used during this period.

Chemical: Trichloroethylene

CAS #79-01-6

Acute criterion: 11,700 ug/l

Chronic criterion: 940 ug/l

Date criteria derived: October 23, 1992

Applicable waterbodies:

Not used during this period.

Chemical: Xylenes

CAS # 1330-20-7

Acute criterion: 1,500 ug/l

Chronic criterion: 117 ug/l

Date criteria derived: August 23, 1990

Applicable waterbodies:

070900005-021/off Pine Creek
 071200004-011/off sewer to Mississippi River
 071200004-019/off sewer to Du Plaines River
 071200004-019/off sewer to Du Page River, West Branch
 071300008-013/off unnamed tributary to Sangamon River
 07140106-067/off sewer to Little Crab Orchard Creek

For additional information concerning these criteria or the derivation process used in generating them, please contact:

ENVIRONMENTAL PROTECTION AGENCY

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LISTING OF DERIVED WATER QUALITY CRITERIA

Bob Mosher

Illinois Environmental Protection Agency

Division of Water Pollution Control

2200 Churchill Road

Post Office Box 19476

Springfield, IL 62794-9276

217/782-3362

DEPARTMENT OF REVENUE

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1996 THIRD QUARTER SUNSHINE INDEX

1. Statute requiring agency to publish information concerning Private Letter Rulings in the Illinois Register:

Name of Act: Illinois Department of Revenue Sunshine Act

Citation: 20 ILCS 2515/1

2. Summary of information:

Index of Department of Revenue sales tax Private Letter Rulings and General Information Letters issued for the Third Quarter of 1996. Private letter rulings are issued by the Department in response to requests from taxpayers concerning the application of the sales tax law to a particular fact situation. Private letter rulings are binding on the Department only as to the taxpayer who is the subject of the request for ruling. (See 86 Ill. Adm. Code 1200.110) General information letters are issued by the Department in response to written inquiries from taxpayers, taxpayer representatives, business, trade, industrial associations or similar groups. General information letters contain general discussions of tax principles or applications. General information letters are designed to provide general background information on topics of interest to taxpayers. General information letters do not constitute statements of agency policy that apply, interpret, or prescribe the Department's position on a particular issue. General information letters may not be relied upon by taxpayers in taking positions with reference to tax issues and create no rights for taxpayers under the Taxpayers' Bill of Rights Act. (See 86 Ill. Adm. Code 1200.120)

The letters are listed numerically, are identified as either a General Information Letter or a Private Letter Ruling and are summarized with a brief synopsis under the following subjects:

Agents	Manufacturing Machinery
Agricultural Producers	Medical Equipment
Assessments	Miscellaneous
Automobile	Motor Fuel Tax
Bingo	Motor Vehicles
Books and Records	Newsprint & Ink
Bulk Sales	Nexus
C.O.A.D.	Nonprofit Institutions
Certificate of Registration	Occasional Sale
Charitable Games	Oil Field Equipment
Cigarette Tax	Penalties
Claims for Credit	Pollution Control Facilities
Coal	Prepaid Services
Coal Mining Equipment	Products of Photoprocessing

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Coins and Precious Metals	Property Tax
Computer Software	Public Utility Taxes
Construction Contractors	Real Estate Transfer Tax
Cooperative Associations	Repairs
Delivery Charges	Replacement Vehicle Tax
Distillation Machinery	Request for Information
Drug Tax Stamps	Returns
Drugs	Rolling Stock Exemption
Enterprise Zones	Sale at Retail
Exempt Organizations	Sale for Resale
Farm Machinery & Equipment	Sale of Service
Federal Excise Tax	Service Occupation Tax
Financial Institutions	Special Order
Food	Statute of Limitations
Food, Drugs & Medical Appliances	Tax Collection
Governmental Bodies	Tax Increment Financing
Graphic Arts	Tax Rate
Gross Receipts	Telecommunications Excise Tax
Hotel Operators' Tax	Temporary Storage
Interest	Tire User Fee
Interstate Commerce	Trade-Ins
Itinerant Vendors	Vehicle
Invested Capital Tax	Vehicle Use Tax
Liquor	Vendors
Liquor Tax	
Local Taxes	
Mandatory Service Charges	
Manufacturer's Purchase Credit	
Manufacturers	

Copies of the ruling letters themselves are available for inspection and may be purchased for a minimum of \$1.00 per opinion plus 50¢ per page for each page over one.

The annual index of Sales and Excise Tax letter rulings (all four quarters) is available for \$3.00.

3. Name and address of person to contact concerning this information:

Margaret Forth
Legal Services Office
101 West Jefferson Street
Springfield, Illinois 62794
Telephone: (217) 782-6996

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AGENTS

ST 96-0375 09/18/1996 Receipts from sales of tangible personal property made by auctioneers or agents acting for disclosed principals are taxable to the disclosed principals, providing that the disclosed principals are in the business of selling such tangible personal property at retail. See 86 Ill. Adm. Code 130.1915. (This is a GIL.)

AGRICULTURAL PRODUCERS AND PRODUCTS

ST 96-0372 09/18/1996 Farm chemicals include chemicals used in production agriculture. See 86 Ill. Adm. Code 130.1955. (This is a GIL.)

AUTOMOBILE RENTING TAX

ST 96-0313 08/09/1996 The Automobile Renting Occupation and Use Tax Act does not apply to rental receipts from the renting of automobiles under lease terms of one year or less to persons who will re-rent those automobiles to others under lease terms of one year or less. See 86 Ill. Adm. Code 180.130(h). (This is a GIL.)

CERTIFICATE OF REGISTRATION

ST 96-0326 08/23/1996 The requirement that Form NUC-1, Illinois Business Registration, be signed by an individual who will be responsible for filing returns and payment of taxes under the Act is authorized by Section 2a of the Retailers' Occupation Tax Act. See 35 ICS 120/2a. (This is a GIL.)

ST 96-0367 09/16/1996 Certificates of Registration are not transferable. See 86 Ill. Adm. Code 130.735. (This is a GIL.)

CLAIMS FOR CREDIT

ST 96-0286 08/06/1996 Only persons who have actually paid tax to the Department can file a claim for credit. See

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86 Ill. Adm. Code 130.1501. (This is a GIL.)

ST 96-0363 09/10/1996 Only persons who have actually paid taxes to the Department can file claims for credit. See 86 Ill. Adm. Code 130.1501. (This is a GIL.)

COMPUTER SOFTWARE

ST 96-0275 07/26/1996 Sellers of maintenance agreements for computer hardware and software must pay Use Tax on the cost price of the materials transferred incident to service performed pursuant to the maintenance agreements. However, if the maintenance agreements provide for updates of canned software and the updates are not separately stated and taxed, the whole agreements would be taxable as sales of canned software. (This is a GIL.)

ST 96-0303 08/07/1996 Transactions for the licensing of computer software are not subject to Retailer's Occupation Tax. Maintenance agreements contain all the criteria set out in 86 Ill. Adm. Code 130.1935(a)(1). (This is a GIL.)

ST 96-0330 08/26/1996 Charges for consulting and telephone support are exempt from taxation if they are separately stated from the selling price of canned software. (This is a GIL.)

CONSTRUCTION CONTRACTORS

ST 96-0250 07/01/1996 Contractors purchasing tangible personal property for incorporation into real estate owned by an exempt entity are exempt from Use Tax. In claiming the exemption they must provide the exemption identification number of the entity owning the real estate and the other information described in the Department's regulations. (See 86 Ill. Adm. Code 130.2075 (d).) (This is a PIR.)

ST 96-0258 07/03/1996 Items which are purchased tax-free because of their intended incorporation into real estate owned by an exempt organization, but which are not, in fact, incorporated into real estate owned by

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an exempt organization are subject to tax. See 86 Ill. Adm. Code 130.2075(d). (This is a GIL.)

ST 96-0265 07/09/1996 Construction contractors who make improvements to real estate by taking materials off the market and permanently affixing them to real estate do not incur Retailers' Occupation Tax liability, but owe Use Tax on the cost price of those materials. See 86 Ill. Adm. Code 130.2075. (This is a GIL.)

ST 96-0379 09/23/1996 Persons who permanently affix tangible personal property to real estate at construction contractors and incur Use Tax liability on their cost price of tangible personal property they physically incorporate into realty. See 86 Ill. Adm. Code 130.1940. (This is a GIL.)

DELIVERY CHARGES

ST 96-0312 08/09/1996 The taxability of delivery charges is set out at 86 Ill. Adm. Code 130.415. (This is a GIL.)

ST 96-0314 08/09/1996 Charges for shipping are gross receipts subject to ROT when they are part of the selling price of the tangible personal property being sold. See 86 Ill. Adm. Code 130.415. (This is a GIL.)

ST 96-0333 08/26/1996 When retailers ship several items of tangible personal property, some of which are taxable at the general rate, some of which are exempt, and some of which are taxable at a rate other than the general rate, the delivery charges must be allocated to the selling price of the taxable items. The items freight charges must be allocated between the items which are taxable at the general rate, the items which are exempt, and the items which are taxable at a rate other than the general rate. The basis for the allocation is the purchase price of the property. See 86 Ill. Adm. Code 130.415. (This is a GIL.)

ST 96-0336 08/27/1996 Incoming freight charges are always a cost of doing business and includable in gross receipts. See 86 Ill. Adm. Code 130.415(e). (This is a GIL.)

ST 96-0356 08/30/1996 Whether transportation or delivery charges may be deducted by retailers in determining their Retailers' Occupation Tax liability depends upon whether the transportation or delivery charges are included in the selling price of the property or are contracted for separately by the purchaser and the retailer. See 86 Ill. Adm. Code 130.415. (This is a GIL.)

ST 96-0357 09/09/1996 Whether transportation or delivery charges may be deducted by retailers in calculating their Retailers' Occupation Tax liability depends not upon the separate billing of such shipping and handling charges but upon whether the charges are included in the selling price of the property or are contracted for separately by purchasers and retailers. See 86 Ill. Adm. Code 130.415. (This is a GIL.)

ENTERPRISE ZONES

ST 96-0272 07/24/1996 The enterprise zone building materials exemption applies to buildings located in a municipality or unincorporated area of a county that established an enterprise zone to make tax-free sales of building materials that will be incorporated into real estate located in the enterprise zone. (This is a GIL.)

FARM MACHINERY & EQUIPMENT

ST 96-0248 07/01/1996 Specialty heating or lighting equipment is not eligible for the Section 179 deduction unless it qualifies for the farm machinery and equipment exemption. However, general heating, lighting and ventilation equipment does not. (This is a GIL.)

ST 96-0261 07/03/1996 Purchases of livestock trailers do not generally qualify for the farm machinery and equipment exemption. See 86 Ill. Adm. Code 130.305. (This is a GIL.)

ST 96-0332 08/30/1996 Machinery and equipment used primarily for agricultural purposes are not eligible for use in State or Federal agricultural programs may

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be purchased free from tax under the farm machinery and equipment exemption. See 86 Ill. Adm. Code 130.305. (This is a GIL.)

ST 96-0381 09/24/1996 In order for a transaction to qualify for exemption on the basis of the Farm Machinery & Equipment exemption, a certification must be obtained containing the information set out at 86 Ill. Adm. Code 130.305(m). (This is a GIL.)

ST 96-0390 09/30/1996 The letter discusses the application of the Farm Machinery & Equipment exemption to various items used in the production and sale of Christmas trees. See 86 Ill. Adm. Code 130.305, 130.330, and 130.1955. (This is a GIL.)

FOOD

ST 96-0298 08/07/1996 This letter describes application of Illinois Administrative Code Sec 130.310 to convenience stores with and without seating. (This is a GIL.)

ST 96-0342 08/29/1996 Herbs and herb teas may qualify for the 1% State rate as food (if not for consumption on the premises where sold and if not prepared for immediate consumption) or as drugs if the products purport on the label to have medicinal qualities. See 86 Ill. Adm. Code 130.310. (This is a GIL.)

ST 96-0374 09/18/1996 With respect to food for human consumption which is to be consumed off the premises where it is sold, Retailers' Occupation Tax is imposed at the rate of 1%. (This is a GIL.)

ST 96-0387 09/30/1996 Food supplement capsules/tablets may qualify for the 1% State rate as food or as drugs if the products purport on the label to be medicinal qualities. See 86 Ill. Adm. Code 130.310. (This is a GIL.)

FOOD, DRUGS & MEDICAL APPLIANCES

ST 96-0358 09/09/1996 Food that is to be consumed off the premises where it is sold (other than alcoholic

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beverages, soft drinks, and food that has been prepared for immediate consumption) and prescription and non-prescription medicines, drugs, and medical appliances are taxed at the rate of 1% plus applicable local taxes. See 86 Ill. Adm. Code 130.310. (This is a GIL.)

GAS REVENUE TAX

ST 96-0382 09/25/1996 For purposes of the Gas Revenue Tax, gross charges do not include any charge for gas or gas services to a customer who acquired contractual rights for the direct purchase of gas or gas services originating from an out-of-state supplier or source on or before March 1, 1995, except for those charges solely related to the local distribution of gas by a public utility. See, Public Act 89-417 (This is a GIL.)

GOVERNMENTAL BODIES

ST 96-0271 07/24/1996 The purchase of building materials to be incorporated into real estate owned by governmental bodies is exempt from ROT. See 86 Ill. Adm. Code 130.2075(d). (This is a GIL.)

ST 96-0300 08/07/1996 Sales made to governmental bodies are exempt from Retailers' Occupation Tax. In order to make a tax exempt purchase, governmental bodies must have an active exemption identification number issued by the Department. However, retailers may accept U.S. Government Bank Cards in sales to the U.S. Government and its agencies without requiring an Illinois exemption number. (This is a GIL.)

GROSS RECEIPTS

ST 96-0257 07/03/1996 The question of whether federal taxes are deductible from gross receipts when calculating Illinois Retailers' Occupation Tax is subject of 86 Ill. Adm. Code 130.455. (This is a GIL.)

ST 96-0266 07/10/1996 "Gross receipts" are defined as all the

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consideration actually received by the seller, except tangible personal property. See 86 Ill. Adm. Code 130.401. (This is a FR.)

ST 96-0293 08/06/1996 In computing ROT liability, no deductions shall be made by taxpayers from gross receipts or selling prices for costs of doing business such as incoming freight charges. See 86 Ill. Adm. Code 130.410. (This is a GIL.)

ST 96-0317 08/13/1996 Federal taxes are not deductible from gross receipts for purposes of computing sales tax liability. The Federal tax shall be paid by the manufacturer, wholesaler, or importer. See 86 Ill. Adm. Code 130.455. (This is a GIL.)

ST 96-0366 09/12/1996 With respect to gasoline, the Retailers' Occupation Tax and Use Tax Acts apply to 70% of the proceeds of sales made on or before January 1, 1990, and before July 1, 1999, and to 100% of the proceeds of sales made thereafter, except that from July 1, 1997 to July 1, 1999, the rate shall be 8% for gasoline sold in this State during the 12 months preceding the date of sale. The Department of Revenue has determined that the percentages in Section 10 of the Gasohol Fuels Tax Abatement Act have not been met. (This is a GIL.)

ST 96-0373 09/18/1996 Gross receipts mean all the consideration actually received by the seller, except traded-in tangible personal property. See 86 Ill. Adm. Code 130.425. (This is a GIL.)

ST 96-0385 09/27/1996 Service charges or other fees levied by the credit or debit card companies to retailers are part of the retailers' cost of doing business and are not deductible from the gross receipts subject to Retailers' Occupation Tax liability. See 86 Ill. Adm. Code 130.401. (This is a GIL.)

ST 96-0386 09/30/1996 The Federal excise tax on fuel is not deductible from gross receipts when determining the sellers' Retailers' Occupation Tax liability because the Federal excise tax on fuel is paid on fuel purchased by manufacturers, wholesalers, or importers rather

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than the customers or end users. See 86 Ill. Adm. Code 130.435. (This is a GIL.)

HOTEL OPERATORS' TAX

ST 96-0345 08/30/1996 The Hotel Operators' Occupation Tax provides no exemption for the rental of rooms to units of government. (This is a GIL.)

ST 96-0351 08/30/1996 In order to obtain a binding determination from the Department as to whether in-room movies are provided in a manner not subject to the Hotel Operators' Occupation Tax, a request for a Private Letter Ruling should be made. See 2 Ill. Adm. Code 1200.110. (This is a GIL.)

ST 96-0361 09/09/1996 Under the Hotel Operators' Occupation Tax, hotel is defined to mean any building in which the public may for consideration obtain sleeping accommodations. It has been the longstanding position of the Department that camp cabins fall within this definition. (This is a GIL.)

ST 96-0377 09/20/1996 In order to obtain a binding determination from the Department as to whether in-room movies are provided in a manner not subject to the Hotel Operators' Occupation Tax, a request for a Private Letter Ruling should be made. See 2 Ill. Adm. Code 1200.110. (This is a GIL.)

LEASING

ST 96-0260 07/02/1996 This letter discusses the differences between true leases and conditional sales. See 86 Ill. Adm. Code Sections 130.110, 130.220 and 130.2010. (This is a GIL.)

ST 96-0281 08/05/1996 Lease agreements that contain purchase options that are equal to the fair market value of the tangible personal property at the end of the lease term are considered true leases, and the lessors incur Use Tax liability on their cost price of tangible personal property purchased for rental purposes. (This is a GIL.)

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ST 96-0291 08/06/1996 Agreements often provide that the purchaser will make all required payments and, at the end of the term, may purchase the equipment for a nominal amount. The term, "nominal amount," as used in this situation, indicates any price less than fair market value. That is, if the equipment, at the end of the lease term, can be purchased by the lessee for an amount that is less than the fair market value of the equipment at that time, the contract is deemed to be a conditional sales agreement. See 86 Ill. Adm. Code 130.2010. (This is a GIL.)

ST 96-0302 08/07/1996 Under Illinois law, lessors incur Use Tax liability on the cost price of the tangible personal property they purchase for the purpose of leasing under true leases. (This is a GIL.)

ST 96-0311 08/09/1996 For purposes of the Illinois sales tax law, lessors of tangible personal property under true leases (except automobiles rented for terms of one year or less) are the users of the property and incur Use Tax upon their cost price of the rental items. (This is a GIL.)

ST 96-0334 08/26/1996 This letter explains how sale/leaseback situations are taxed. (This is a GIL.)

ST 96-0343 08/30/1996 In general, rental receipts from the rental of tangible personal property under true leases are not subject to tax under Illinois law. The only exception is automobiles leased for one year or less. Illinois lessors incur the tax obligation on the rental of tangible personal property if they bring into Illinois for the purpose of leasing. See 86 Ill. Adm. Code 130.2010. (This is a GIL.)

LOCAL TAXES

ST 96-0259 07/03/1996 The most important element in selling is the acceptance of the purchase order. Consequently, the location at which the purchase order is accepted, determines the proper tax rate. In the absence of acceptance of a purchase order in Illinois, the location of the sale is considered to be where the inventory is maintained in the State. See 86 Ill. Adm. Code 270.115. (This is a GIL.)

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ST 96-0268 07/11/1996 Home rule sales taxes are enforceable in areas that are not within the corporate limits but that are covered by an annexation agreement. See 65 ILCS 5/11-15.1-2.1(a). (This is a GIL.)

ST 96-0297 08/07/1996 The Municipal Telecommunications Tax (65 ILCS 5/8-11-17) and the Municipal Messages Tax (65 ILCS 5/8-11-2) are not administered by the State. Therefore the Department has no opinion regarding the taxation of cable television operators under the Municipal Telecommunications Tax or the Municipal Messages Tax. (This is a GIL.)

ST 96-0347 08/30/1996 Manufactured housing is tangible personal property subject to home rule Municipal retailers' taxes imposed by the State. Such taxes are levied by the corporate authorities of a home rule municipality. See 65 ILCS 5/8-11-1 et seq. (This is a GIL.)

ST 96-0368 09/17/1996 It is the Department's position that the most important element in selling is the acceptance of the purchase order. Consequently, the location at which purchase orders are accepted determines the proper tax rate. See 86 Ill. Adm. Code 270.115. (This is a GIL.)

ST 96-0370 09/17/1996 Municipal home rule sales tax is enforceable in areas that are not within the corporate limits of the municipality imposing the tax but that are covered by an annexation agreement. See 65 ILCS 5/11-15.1-2.1(a). Likewise, the municipal portion of the state sales tax collected in the area covered by the annexation agreement should also be distributed to the municipality with whom the agreement has been made. (This is a GIL.)

MANUFACTURER'S PURCHASE CREDIT

ST 96-0323 08/20/1996 For MPC earned or used prior to June 30, 1995, the credit earned or used must be reported to the Department by the last day of the second month following the month of creation or use. Failure to timely report the credit earned will result in expiration of credit as of the date that it is earned. See 35 ILCS 105/3-85 and 110/3-70 (1994

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State Bar Edition). (This is a GIL.)

MANUFACTURING MACHINERY & EQUIPMENT

ST 96-0252 07/01/1996 The manufacturing machinery and equipment exemption does not extend to consumable supplies. See 86 Ill. Adm. Code 130.330. (This is a GIL.)

ST 96-0269 07/11/1996 Machinery and equipment used to convey, handle, or transport tangible personal property to be sold within production stations on the production line qualify for the manufacturing machinery and equipment exemption. See 86 Ill. Adm. Code 130.330. (This is a PUR.)

ST 96-0282 08/06/1996 The manufacturing machinery & equipment exemption applies to computers used primarily in manufacturing, computer-aided design, and computer-assisted design, computer-aided design, computer-assisted design (CAD/CAM) system. See 86 Ill. Adm. Code 130.330. (This is a GIL.)

ST 96-0289 08/06/1996 Industrial gases used in manufacturing processes are considered to be consumable supplies and do not qualify for the manufacturing machinery and equipment exemption. (This is a GIL.)

ST 96-0292 08/06/1996 This letter discusses the purchase of manufacturing machines by construction contractors who will transfer those machines to manufacturers in the course of performing construction contracts. (This is a GIL.)

ST 96-0325 08/23/1996 Machinery and equipment used in pre-production and post-production quarrying activities do not qualify for the manufacturing machinery & equipment exemption. See 86 Ill. Adm. Code 130.330. (This is a GIL.)

ST 96-0338 08/29/1996 To the extent that balers are used primarily (over 50% of the time) to change paper into material with a different form or use, and that material is sold at wholesale or retail or leased, such balers can qualify for the manufacturing machinery and equipment exemption. See 86 Ill. Adm.

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Code 130.330. (This is a GIL.)

ST 96-0341 08/29/1996 Under 86 Ill. Adm. Code 130.330(c)(2), "[a] machinery means major mechanical machines or major components of such machines contributing to a manufacturing or assembling process: (i) including, machinery and equipment used in the general process of repairing or rebuilding machinery and equipment for on-base manufacture of exempt machinery and equipment. (This is a GIL.)

ST 96-0380 09/23/1996 Equipment which is not primarily in extractive activities does not qualify for the manufacturing machinery and equipment exemption. See 130.330 (b)(4). (This is a GIL.)

ST 96-0392 09/30/1996 The Manufacturing Machinery and Equipment exemption does not extend to machinery or equipment that is used in the production cycle after the completion of tangible personal property after the completion of the production cycle. See 86 Ill. Adm. Code 130.330 (d)(4)(D). (This is a GIL.)

ST 96-0394 09/30/1996 Filter aids do not qualify for the MMLE Exemption pursuant to 86 Ill. Adm. Code 130.330. (This is a PUR.)

MISCELLANEOUS

ST 96-0255 07/02/1996 Generally, membership fees are not part of the gross receipts that are subject to Retailers' Occupation Tax liability. The Retailers' Occupation Tax does not apply to sales of intangibles. (This is a GIL.)

ST 96-0262 07/03/1996 In Illinois, no person, firm, or corporation shall conduct raffles or chances without having first obtained a license from the governing body. The license shall be issued to the person, firm, or corporation in which the raffle chances will be sold or issued. 230 ILCS 15/2 and 3(1994 State Bar Edition). Licenses shall be issued only to bona fide religious, charitable, labor, business, fraternal, educational, or veterans' organizations that operate without profit to their members and that have been in

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existence continuously for a period of 5 years immediately before making application for a license. 230 ILCS 15/2 (1994 State Bar Edition). (This is a GIL.)

ST 96-0263 07/08/1996 Retail sales of items of tangible personal property are subject to Retailers' Occupation Tax. Retailers' Occupation Tax is measured by the seller's gross receipts from such sales. (This is a GIL.)

ST 96-0305 08/07/1996 When retailers of tangible personal property sell an installment contract or "paper" to a third party, the difference between the selling price of the tangible personal property and the selling price of the installment contract or "paper" is a cost of doing business and is not deductible in computing Retailers' Occupation Tax liability. See 86 Ill. Adm. Code 130.1960. (This is a GIL.)

ST 96-0316 08/12/1996 The Illinois constitution grants the Illinois General Assembly broad powers to levy taxes. (This is a GIL.)

ST 96-0327 08/26/1996 Membership fees, which do not correspond to the sale of tangible personal property, are intangibles and do not constitute gross receipts subject to Retailers' Occupation Tax. (This is a GIL.)

ST 96-0329 08/26/1996 On-line subscription and consulting services are not subject to Retailers' Occupation Tax. See 86 Ill. Adm. Code 130.101. (This is a GIL.)

ST 96-0355 08/30/1996 No refunds are available for monies paid to the Department prior to 12/29/95 in satisfaction of the Retailers' Occupation Tax liability when through the Illinois Tobacco Products Tax Act was held unconstitutional. (This is a GIL.)

ST 96-0369 08/17/1996 Manufacturers, importers and wholesalers can enter into agency agreements with the Department, whereby they register, file returns and remit Retailers' Occupation Tax on behalf of local retailers selling their products. See 86 Ill. Adm. Code 130.550. (This is a GIL.)

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ST 96-0388 09/30/1996 Persons who are engaged in the business of selling steam to purchasers for use or consumption and not for resale, incur Retailers' Occupation Tax liability on their receipts from such sales. See 86 Ill. Adm. Code 130.2156. (This is a GIL.)

ST 96-0393 09/30/1996 The Tobacco Products Tax Act of 1995 provides that the tax is not imposed on sales of tobacco products to the United States or any entity thereof. See 86 Ill. Adm. Code 660.30(d). (This is a GIL.)

MOTOR FUEL TAX

ST 96-0371 09/17/1996 For purposes of Motor Fuel Tax refund claims, ethanol added to non-highway fuel usage are not acceptable. Only ethanol that is supported by positive proof of the exact amount of ethanol fuel used for a nontaxable purpose will be approved. See 86 Ill. Adm. Code 500.245 (This is a GIL.)

NEWSPRINT & INK

ST 96-0340 08/29/1996 Retailers who engage in retail sales of newspapers and magazines incur no Retailers' Occupation Tax liability. See 86 Ill. Adm. Code 130.2105. (This is a GIL.)

ST 96-0353 08/30/1996 The taxation of newspapers, books, magazines and sheet music is the subject of 86 Ill. Adm. Code 130.2105. (This is a GIL.)

NEWS

ST 96-0320 08/15/1996 A retailer maintaining a place of business in Illinois includes a retailer having or maintaining within this State any agent or other representative operating within this State under the authority of the retailer. See 86 Ill. Adm. Code 150.201. (This is a GIL.)

ST 96-0322 08/19/1996 This letter describes the guidelines used to determine whether retailers are required to remit

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Retailers' Occupation Tax or collect Use Tax in Illinois. See 86 Ill. Adm. Code 150.201. (This is a GIL.)

ST 96-0335 08/27/1996 This letter describes the nexus requirements that must be present before sellers are subject to Illinois sales tax laws. See 86 Ill. Adm. Code 150.201. (This is a GIL.)

ST 96-0378 09/20/1996 This letter discusses nexus issues related to a retail operation which will have nexus in Illinois and an out of state mail order catalog operation which does not have a physical presence in Illinois, when both are owned by an out of state limited partnership which does not have nexus in Illinois. (This is a PLR.)

POLLUTION CONTROL FACILITIES

ST 96-0256 07/03/1996 Air cleaners, which have as their primary purpose the removal of pollutants from the air, can qualify for the pollution control facilities exemption from sales tax. See 86 Ill. Adm. Code 130.335. (This is a GIL.)

ST 96-0283 09/06/1996 Purchasers of Pollution Control Facilities must give their sellers the certification set out in 86 Ill. Adm. Code 130.335(a). (This is a GIL.)

ST 96-0290 08/06/1996 Generally, air filters and cleaners that have as their primary function the removal of pollutants from the air can qualify for the pollution control facilities exemption. See 86 Ill. Adm. Code 130.335. (This is a GIL.)

ST 96-0309 08/09/1996 This letter discusses the "primary purpose" requirement of the pollution control facilities exemption from sales tax. See 86 Ill. Adm. Code 130.335. (This is a GIL.)

ST 96-0319 08/14/1996 86 Ill. Adm. Code 130.335(a) describes the type of documentation that purchasers must provide to suppliers in order to document the

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Pollution Control Exemption. (This is a GIL.)

ST 96-0332 08/26/1996 In order to claim the exemption for pollution control facilities, purchasers must certify their intended use of the items being purchased. See 86 Ill. Adm. Code 130.335. (This is a GIL.)

ST 96-0344 08/30/1996 Purchasers of Pollution Control Facilities must give their sellers certifications as set out in 86 Ill. Adm. Code 130.335(a). (This is a GIL.)

ST 96-0384 09/27/1996 If the primary purpose of items is to serve as part of an overall system or method of eliminating, reducing, or preventing pollution, they may qualify for the exemption. See 86 Ill. Adm. Code 130.335. (This is a GIL.)

ST 96-0389 09/30/1996 Vapor recovery equipment can qualify for the pollution control facilities exemption if its primary purpose is to control vapor pollution at gasoline filling station dispensers. However, if the primary purpose of the equipment is to confer economic benefits upon users, it will not qualify for exemption. See 86 Ill. Adm. Code 130.335. (This is a GIL.)

PRODUCTS OF PHOTOPROCESSING

ST 96-0267 07/10/1996 Products of photoprocessing include prints, photographic reproductions, and microfilm. See 86 Ill. Adm. Code 130.2000. (This is a PLR.)

PUBLIC UTILITY TAXES

ST 96-0278 07/30/1996 Unincorporated instrumentalities of the Federal government are exempt from the payment of taxes under the Gas Revenue Tax Act and the Public Utilities Revenue Act. See 86 Ill. Adm. Code 470.160 and 510.160. (This is a GIL.)

REPAIRS

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ST 96-0294 08/06/1996 This letter discusses the taxability of maintenance agreements. (This is a GIL.)

ST 96-0304 08/07/1996 This letter discusses the taxation of manufacturer's warranties and extended warranties or maintenance agreements. (This is a GIL.)

ST 96-0348 08/30/1996 In general, when tangible personal property is transferred as an incident of repair services on equipment, such transfers are subject to liability under the Service Occupation Tax Act. (This is a GIL.)

REPLACEMENT VEHICLE TAX

ST 96-0328 08/26/1996 A tax of \$200 is imposed on purchases of passenger cars when purchased by, or on behalf of, insurance companies to replace passenger cars of insureds in settlement of total loss claims. See 625 ILCS 5/3-2001. (This is a GIL.)

ROLLING STOCK EXEMPTION

ST 96-0284 08/06/1996 The Retailers' Occupation and Use Tax Act provides an exemption for sales of tangible personal property to interstate carriers for hire for use as rolling stock moving in interstate commerce. (This is a GIL.)

ST 96-0287 08/06/1996 Retailers' Occupation Tax is not incurred on sales of tangible personal property to interstate carriers for hire for use as rolling stock moving in interstate commerce on a regular and frequent basis. (This is a GIL.)

ST 96-0360 09/09/1996 The rolling stock exemption applies to sales of tangible personal property sold to interstate carriers for hire for use as rolling stock moving in interstate commerce on a regular and frequent basis. See 86 Ill. Adm. Code 130.346. (This is a GIL.)

SALE AT RETAIL

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ST 96-0254 07/02/1996 A person who engages in selling grapevines to purchasers acts as a retailer and incurs Retailers' Occupation Tax on such sales. (This is a GIL.)

ST 96-0296 08/07/1996 Sales of carpet cushion to end users are taxable retail sales. (This is a GIL.)

ST 96-0337 08/29/1996 Seminar, training session, or continuing education providers incur Retailers' Occupation Tax on the gross receipts from sales in Illinois of seminar or training manuals such as workbooks and reference books. (This is a GIL.)

ST 96-0339 08/29/1996 When retailers accept purchase orders outside Illinois but maintain inventories in Illinois from which they fill Illinois purchase orders, the transactions are Illinois retail sales subject to ROT. (This is a GIL.)

ST 96-0359 09/09/1996 An Illinois retailer is one who either accepts purchase orders in the State of Illinois or maintains an inventory in Illinois and fills Illinois orders from that inventory. The Illinois retailer is responsible for Retailers' Occupation Tax on gross receipts from sales and must collect the corresponding Use Tax incurred by purchasers. (This is a GIL.)

SALE FOR RESALE

ST 96-0253 07/01/1996 Certificates of Resale (described in the enclosed copy of 86 Ill. Adm. Code 130.1405) are generally required to contain the purchaser's registration number. (This is a GIL.)

ST 96-0285 08/06/1996 Certificates of resale must contain the information set out in 86 Ill. Adm. Code 130.1405. (This is a GIL.)

ST 96-0306 08/07/1996 Certificates of resale must contain the information set out in 86 Ill. Adm. Code 130.1415(b). (This is a GIL.)

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ST 96-0307 08/08/1996 Drop-shippers must be evidenced by certificates of resale from the purchasers or will be subject to Retailers' Occupation Tax liability. See 86 Ill. Adm. Code 130.1405. (This is a GIL.)

ST 96-0310 08/09/1996 This letter sets forth how a standard drop shipment transaction is treated in Illinois for Retailers' Occupation Tax and Use Tax purposes. (This is a GIL.)

ST 96-0331 08/26/1996 This letter explains how to document sales for resale in drop shipment situations. (This is a GIL.)

ST 96-0346 08/30/1996 When retailers transfer the ownership of packaging materials or containers to customers along with the tangible personal property contained therein, the purchase of such packaging materials or containers can qualify for the resale deduction. See 86 Ill. Adm. Code 130.2070. (This is a GIL.)

ST 96-0354 08/30/1996 This letter discusses drop shipment transactions. See 86 Ill. Adm. Code 130.1405. (This is a GIL.)

ST 96-0376 09/20/1996 If customers purchase tangible personal property in Illinois for resale, and not for use or consumption, the purchasers should provide the retailers with Certificates of Resale. See 86 Ill. Adm. Code 1405. (This is a PLR.)

ST 96-0383 09/25/1996 Generally, when a restaurant purchases items such as paper napkins, plastic utensils, paper or plastic serving containers, and disposable cups that will be used on-premises in lieu of more durable serving equipment, such items are fully taxable. If, however, a restaurant purchases containers or utensils that will be transferred to customers in to-go orders or deliveries, these items can be considered as Certificates of Resale. Such items are considered to be purchased for resale if they are transferred by the restaurant with the food or beverages being purchased. See 86 Ill. Adm. Code 130.2070. (This is a GIL.)

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SALE OF SERVICE

ST 96-0251 07/01/1996 Under the Service Occupation Tax Act, a serviceman is taxed on tangible personal property transferred as an incident to the sale of service. See 86 Ill. Adm. Code 140.101. (This is a GIL.)

ST 96-0264 07/08/1996 This letter applies the Service Occupation Tax Act to management services, which involve contract management services, which include mailing, facsimile services, offset printing services, etc., and commercial reprographics centers. (This is a GIL.)

ST 96-0274 07/24/1996 This letter discusses Service Occupation Tax and Service Use Tax liabilities when out-of-state servicemen provide service to customers in Illinois. See 86 Ill. Adm. Code Sections 140.101 and 140.101. (This is a GIL.)

ST 96-0308 08/09/1996 Under the Service Occupation Tax Act, servicemen are taxed on tangible personal property transferred as an incident to the sale of service. See 86 Ill. Adm. Code 140.101. (This is a GIL.)

SERVICE OCCUPATION TAX

ST 96-0279 07/31/1996 Repair services subject to repairmen's Occupation Tax liability based on the cost of parts transferred incident to the repair service. See 86 Ill. Adm. Code 140.101. (This is a PLR.)

ST 96-0299 08/07/1996 This letter discusses how printers can satisfy SOT liability. (This is a GIL.)

ST 96-0301 08/07/1996 Servicemen that provide service under separate maintenance agreements are required to pay Use Tax to their Illinois suppliers on the cost of the supplies required for the service. If the suppliers are not required to collect Illinois taxes, the suppliers must be required to collect Illinois taxes. The cost of the supplies under the maintenance agreement is based upon their cost price of parts which are used in performing services under the maintenance agreements. See 86 Ill. Adm. Code 140.301(b)(3), Information Bulletin FY91-45 and 86 Ill. Adm. Code

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150.310(a)(3). (This is a GIL.)

ST 96-0364 09/11/1996 The Service Occupation Tax is incurred when Illinois servicemen transfer tangible personal property incident to service. (This is a GIL.)

ST 96-0391 09/30/1996 This letter discusses taxation of custom-ordered catalogs. See 86 Ill. Adm. Code 130.1395. (This is a GIL.)

TELECOMMUNICATIONS EXCISE TAX

ST 96-0249 07/01/1996 Section 2 of the Telecommunications Excise Tax Act excludes the provision of telecommunications services to the Federal and State governments, and State Universities created by statute, from the definition of a "sale at retail" that is subject to Telecommunications Excise Tax liability. See 35 ILCS 630/2 (1994 State Bar Edition). (This is a GIL.)

ST 96-0270 07/12/1996 Charges for automated retrieval or data processing are generally not taxable under the Telecommunications Excise Tax. See 86 Ill. Adm. Code 495.100(c). (This is a GIL.)

ST 96-0273 07/24/1996 The Telecommunications Excise Tax is imposed upon the act or privilege of originating or receiving intrastate or interstate telecommunications in Illinois at the rate of 5% of the gross charges for such telecommunications purchased at retail from retailers. (This is a GIL.)

ST 96-0280 08/05/1996 Persons who provide satellite television services, including basic network channels, pay per view movies, concerts and sporting events, are not subject to the Telecommunications Excise Tax based on those activities. (This is a PIR.)

ST 96-0288 08/06/1996 The telecommunications excise tax is not imposed on State Universities created by statute. (This is a GIL.)

ST 96-0315 08/12/1996 This letter discusses the taxation of telephone cards. (This is a GIL.)

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ST 96-0318 08/14/1996 This letter discusses items subject to the telecommunications excise tax. (This is a GIL.)

ST 96-0324 08/23/1996 This letter describes the application of the Telecommunications Excise Tax to sales of telephone calling cards. (This is a GIL.)

ST 96-0349 08/30/1996 A monthly membership fee is a portion of the gross charges for "the act or privilege of originating or receiving telecommunications in this State" and not the provision of a service in connection with originating or receiving telecommunications. As such, a monthly membership fee is subject to the Telecommunications Excise Tax. (This is a GIL.)

ST 96-0362 09/09/1996 The Telecommunications Excise Tax applies to gross charges received for fax or facsimile transmission services. See 86 Ill. Adm. Code 495.110. (This is a GIL.)

USE TAX

ST 96-0276 07/26/1996 An interim use exemption is provided for tangible personal property that is used by retailers prior to its ultimate sale at retail, provided that such property is carried as inventory on the books of the retailers or is otherwise available for sale during the interim use period. See 86 Ill. Adm. Code 150.306. (This is a GIL.)

ST 96-0277 07/30/1996 Persons who purchase tangible personal property to be used in Illinois as promotional items (to be given away) are making a use of those items and incur Use Tax liability on the purchase price of those items. See 86 Ill. Adm. Code 150.101. (This is a GIL.)

ST 96-0295 08/07/1996 In order to establish that out-of-State sellers have a sufficient nexus with Illinois so that they may be required to register as Use Tax collectors for Illinois, the out-of-State sellers must have intentionally exploited the Illinois consumer market and they must have a physical presence in Illinois. See Quill Corporation v. North

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Dakota, 112 S. Ct. 1904 (1992). (This is a GIL.)

ST 96-0321 08/16/1996 This letter discusses the applicability of the Illinois Use Tax to boats purchased outside the State of Illinois, which are subsequently brought into Illinois for use in this state. (This is a GIL.)

ST 96-0350 08/30/1996 Illinois has no provision for the return of the use tax paid by foreign visitors. (This is a GIL.)

ST 96-0365 09/12/1996 In general, in a gift situation, donors who purchase tangible personal property and give it away in Illinois make a taxable use of the property when making such a gift. As a result, donors incur a Use Tax liability based upon the cost price of the property donated. See 86 Ill. Adm. Code 150.305. (This is a GIL.)

JOINT COMMITTEE ON ADMINISTRATIVE RULES
ILLINOIS GENERAL ASSEMBLY

SECOND NOTICES RECEIVED

The following second notices were received by the Joint Committee on Administrative Rules during the period of November 19, 1996 through November 25, 1996 and have been scheduled for review by the Committee at its December 17, 1996 meeting. Other items not contained in this published list may also be considered. Members of the public wishing to express their views with respect to a rule should submit written comments to the Committee at the following address: Joint Committee on Administrative Rules, 700 Stratton Bldg., Springfield, IL 62706.

Second Notice Expires	Agency and Rule	Start of First Notice	JCAR Meeting
1/2/97	Illinois Racing Board, Pari-Mutuels (11 Ill Adm Code 300)	9/13/96 20 Ill Reg 12333	12/17/96
1/3/97	Department of Natural Resources, Duck, Goose and Coot Hunting (17 Ill Adm Code 590)	10/4/96 20 Ill Reg 12944	12/17/96
1/3/97	Department of State Police, Electronic Transmission of Fingerprints (20 Ill Adm Code 1265)	2/16/96 20 Ill Reg 3077	12/17/96
1/4/97	Department of Public Aid, Food Stamps (89 Ill Adm Code 121)	8/2/96 20 Ill Reg 10263	12/17/96
1/4/97	Secretary of State, Lobbyist Registration and Reports (2 Ill Adm Code 560)	9/27/96 20 Ill Reg 12701	12/17/96
1/5/97	Illinois Historic Preservation Agency, Rules for the Protection, Treatment and Inventory of Archaeological and Paleontological Resources on Public Land (17 Ill Adm Code 4190)	8/9/96 20 Ill Reg 10486	12/17/96
1/5/97	Department of Natural Resources, Advertising in Department Publications (17 Ill Adm Code 2650)	5/12/96 20 Ill Reg 6633	12/17/96
1/8/97	Office of Banks and Real Estate, Repeal of Acquisition of Former Main Banking Premises or Branches of Eligible Depository Institutions (38 Ill Adm Code	10/4/96 20 Ill Reg 13024	12/17/96

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1/8/97	Office of Banks and Real Estate, Repeal of Posting Notice of a Proposed Acquisition (38 Ill Adm Code 370)	10/4/96 20 Ill Reg 13028	12/17/96	
1/8/97	Office of Banks and Real Estate, Repeal of Americans with Disabilities Act Grievance Procedure (4 Ill Adm Code 1100)	10/4/96 20 Ill Reg 13018	12/17/96	
1/8/97	Department of Rehabilitation Services, Assessment for Determining Eligibility and Rehabilitation Needs (89 Ill Adm Code 553)	8/2/96 20 Ill Reg 10305	12/17/96	
1/8/97	Department of Rehabilitation Services, Services (89 Ill Adm Code 590)	9/13/96 20 Ill Reg 12335	12/17/96	
1/8/97	Pollution Control Board, Effluent Standards (35 Ill Adm Code 304)	8/16/96 20 Ill Reg 10760	12/17/96	
1/8/97	Pollution Control Board, Water Quality Standards (35 Ill Adm Code 302)	8/9/96 20 Ill Reg 10539	12/17/96	

PROCLAMATIONS

96-548

PHANTOM REGIMENT DRUM AND BUGLE CORPS DAY (REVISED)

Whereas, the Phantom Regiment Drum and Bugle Corps has been active for 25 years; and

Whereas, the Phantom Regiment Drum and Bugle Corps of Rockford-Jones Park is committed to furthering the talents and interest of young persons in the art of musical marching units; and

Whereas, the Phantom Regiment Drum and Bugle Corps has been an extremely successful organization; and

Whereas, the Phantom Regiment Drum and Bugle Corps tied for first place in the Drum Corps International World Competition with their program, "The Defiant Heart"; and

Whereas, the Phantom Regiment Drum and Bugle Corps will celebrate their outstanding accomplishments with a banquet on November 29, 1996;

Therefore, I, Jim Edgar, Governor of the State of Illinois, proclaim November 29, 1996, as PHANTOM REGIMENT DRUM AND BUGLE CORPS DAY in recognition of their outstanding performance.

Issued by the Governor October 10, 1996.

Filed by the Secretary of State November 15, 1996.

96-618

L. DALE SANDERS DAY

Whereas, Illinois Growth Enterprises, Inc. is a not-for-profit corporation which is dedicated to providing and facilitating effective quality services to which individuals and businesses are able to realize their employment potential and enhance their self-worth; and

Whereas, Illinois Growth Enterprises, Inc. has been fortunate in having L. Dale Sanders as executive director for the last 25 years; and

Whereas, Mr. Sanders has initiated many programs at Illinois Growth Enterprises, such as implementing a partnership with Montague Road Facility packaging and assembly operation to offer training and job opportunities, launching the Janitorial Services Division, and founding the Center for Community Re-Entry in conjunction with Rockford Memorial Hospital; and

Whereas, in addition to his extensive contributions to Illinois Growth Enterprises, Inc., L. Dale Sanders has also been very active in his community, serving numerous organizations: Care-A-Van, Golden Agers Center, Jaycee's, Kiwanis, Milestone, the MILL, St. Rita School Board and many others; and

Whereas, Illinois Growth Enterprises, Inc. is honoring L. Dale Sanders with a celebration for his 25 years of dedicated service;

Therefore, I, Jim Edgar, Governor of the State of Illinois, proclaim November 26, 1996, as L. DALE SANDERS DAY in Illinois.

Issued by the Governor November 15, 1996.

Filed by the Secretary of State November 22, 1996.

96-619

YEAR OF THE ILLINOIS STATE POLICE

Whereas, the Illinois State Police is the lead law enforcement agency for

the state; and

Whereas, the Illinois State Police ensures highway and public safety through investigation, enforcement, service to the public, education patrol and technical assistance; and

Whereas, the Illinois State Police promotes the development and application of science and technology to improve communication, investigation, and the utilization within the Illinois State Police and the criminal justice system; and

Whereas, the Illinois State Police assists local law enforcement, criminal justice and public service agencies in providing needed services and technologies in accomplishing their missions; and

Whereas, the Illinois State Police ensures the public trust through unimpeachable integrity and pride by its employees; and

Whereas, the Illinois State Police is celebrating its 75th anniversary this year;

Therefore, I, Jim Edgar, Governor of the State of Illinois, proclaim 1997 as the YEAR OF THE ILLINOIS STATE POLICE in Illinois.

Issued by the Governor November 15, 1996.

Filed by the Secretary of State November 22, 1996.

96-620

JOE ANN MCLANDON DAY

Whereas, Joe Ann McLandon, Executive Director of Maxwell Manor Nursing Home and President of BMJ, has been an outstanding employer in the State of Illinois; and

Whereas, Ms. McLandon has contributed significantly to the health and welfare of many Illinois citizens by providing a safe, clean, affordable residential and nursing facility for those in need of such care; and

Whereas, Ms. McLandon has provided employment for numerous Illinois citizens as evidenced by the fact that Maxwell Manor, Inc. is one of the largest African-American employers on the south side of Chicago; and

Whereas, Ms. McLandon has served with distinction on numerous boards and commissions; and

Whereas, Ms. McLandon has earned the respect and gratitude of the people of the State of Illinois for her volunteer work in the community; and

Whereas, Ms. McLandon will retire from Maxwell Manor Nursing Home;

Therefore, I, Jim Edgar, Governor of the State of Illinois, proclaim February 28, 1997, as JOE ANN MCLANDON DAY in Illinois.

Issued by the Governor November 19, 1996.

Filed by the Secretary of State November 22, 1996.

96-621

CANCER RESOURCE CENTER DAY

Whereas, the Cancer Resource Center is a welcome addition to the Gurnee Mills community; and

Whereas, the purpose of the Cancer Resource Center at Gurnee Mills Outlet Mall is to provide support to citizens by providing information designed to help effectuate the early detection and treatment of cancer; and

Whereas, the Cancer Resource Center is committed to developing a support team with family and friends by allowing them access to information that will

enable them to participate in the decisions to be made regarding the health of their loved one; and

Whereas, the Cancer Resource Center will assist family, friends and care providers in gaining knowledge from state, national and international healthcare and government agencies; and

Whereas, the Cancer Resource Center will celebrate its opening with a ribbon-cutting ceremony on December 8, 1996;

Therefore, I, Jim Edgar, Governor of the State of Illinois, proclaim December 8, 1996, as CANCER RESOURCE CENTER DAY in Illinois.

Issued by the Governor November 20, 1996.

Filed by the Secretary of State November 22, 1996.

96-622

LAKE PARK MARCHING BAND COMMEMORATED

Whereas, the Lake Park Marching Band received first place in the Bands of America Grand National Championships on November 9, 1996; and

Whereas, the Lake Park Marching Band has placed in the top 10 bands in the Bands of America Grand National Championships consistently for the last 11 years;

Whereas, this honor recognizes the talent and commitment of this group and exemplifies the dedication of the students as well as their teaching staff and parents to the field of music; and

Whereas, the Lake Park Marching Band has been a source of pride for its school as well as community;

Therefore, I, Jim Edgar, Governor of the State of Illinois, commend the Lake Park Marching Band on their impressive achievements.

Issued by the Governor November 20, 1996.

Filed by the Secretary of State November 22, 1996.

Rates acted upon during the quarter of October 1 through December 31, 1996 are listed in the Issues Index by Title number, Part number and Issue number. For example, 50 Ill. Adm. Code 4401 published in Issue 40 will be listed as 50-4401-40. Inquiries about the Issues Index may be directed to the Administrative Code Division at 217-782-4414 or jstatale@cg.state.il.us (Internet address).

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